# Industrial Finishing

Reg. U. S. Pat. Off.

*An Independent Publication Devoted to the Finishing of Industrial Products*

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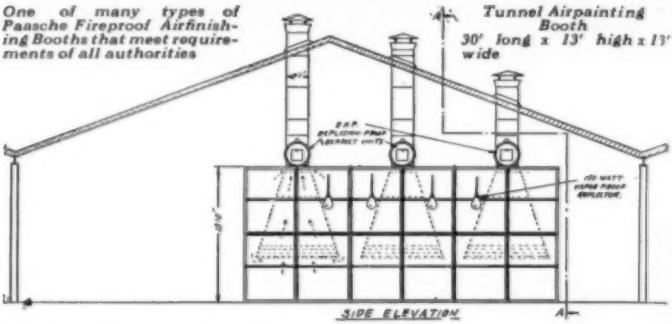
One of many types of Paasche Fireproof Airfinishing Booths that meet requirements of all authorities




# Paasche

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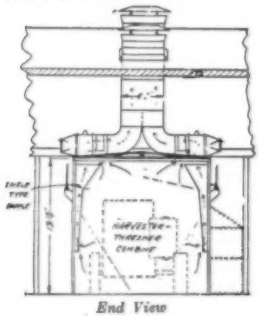
*Diagrams: details of Paasche tunnel airpainting booth with six Fireproof Ventilating Units — an ideal setup for coating heavy units.*



*End View*

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**LET FACTS AND FIGURES SHOW ADVANTAGES**

IF6—Gray

# From the Editor's Window

WHETHER or not the general acceptance and widespread practice of buying on deferred payments has had anything to do with bringing about the condition of decreased and deferred purchases which has prevailed for some months, we are not prepared to say; but we do feel that most of the business industrial concerns have failed to get, since they noticed any marked reduction in sales volume, represents, not so much lost business in the form of wasted "water over the dam," but rather more deferred business which will soon materialize.

Manufactured goods previously sold are wearing out, becoming inadequate, obsolete or being removed from useful service, and as a result, replacements are continually needed. Also, more people are reaching the point where they are immediate, first-time prospective buyers.

Each dollar spent helps everyone, and when the really large expenditures planned for this year get under way—the billions of dollars to be spent by the railroads, public utilities, Governmental agencies, etc.—more money to spend will become available to the country's buying masses, and trade in general will resume its natural and normal volume.

Interest has not lagged in finishing materials, equipment and supplies of recognized merit—even though some purchasing has been curtailed or deferred. Users of such goods are investigating and planning for the future. Too much responsibility rests upon the finish of practically every manufactured product to permit any let-up in efforts to set and maintain higher standards for durability and for protective, decorative and general sales-appeal features—and every user is keenly interested in better methods of putting on these finishes economically, efficiently and rapidly.

W. H. Rohr

Managing Editor

# One of the Most Familiar Tools In Industry

THE outstanding acceptance of DeVilbiss spray finishing equipment in industry is the result of an ever-increasing recognition of DeVilbiss superiority in performance.

Spray finishing outfits and spray guns are judged by industry today squarely on their merits as production units. Users are finding that the spray method of applying finish is subject to the same variations of efficiency that obtain in other production processes and tools.

In the light of this more exact analysis the advantages conferred by DeVilbiss equipment are vividly revealed. Years of research, study, experimentation, development and experience are embodied in every DeVilbiss installation, outfit, spray gun and part. These are reflected in definite savings of cost, time and material, and in the enhancement of the result. It costs you nothing to find out what we can tell you about your own particular requirements. It may save you much.

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*How we successfully met the demand for*

# Lower Prices on Finished Fixtures and Showcases

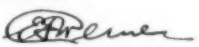
*By* *E. F. WERNER*

**Superintendent of American Fixture & Showcase Mfg. Co., relates his experience with a production problem that is common to practically all manufacturers—and explains first failures and ultimate successes in arriving at a satisfactory solution**

*"I am glad this article is written. It brings to my mind the realization that the finishing room too often is the stepchild of the organization.*

*"I know in my own case, more attention has been paid to the millroom, cabinet and assembly departments than to the finishing room and yet, when things went wrong, that was the first place jumped on.*

*"I really feel that one reason for so little consideration for the finishing room is that the average boss and owner has worked his way up from the millroom or cabinet room and so being more familiar with those departments, he concentrates on them to the exclusion of the other because he knows so little about it and does not want to be 'showed up.'"—*



IN YEARS gone by, the margin of profit in our business was such as to permit very good finishes and all-around good workmanship on every article sold. The individual cost system was not developed to a very high degree in our shop, so that the jobs which did not show a profit were not always noticeable. The end of the year showed a gain for the plant, and so the jobs that were not profitable were lost in the midst of those that carried the burden of the company.

During the past several years conditions have changed in our line. The hand-carved, intricately-designed and constructed article has become the exception rather that the rule. The six and seven coat job, hand rubbed has almost become extinct. It is true that these jobs do come through occasionally, but not in the numbers they formerly did, nor in sufficient amounts to carry a production shop such as ours.

### Lower Prices Demanded

"Get that price down to reason." "We cannot sell merchandise at that price when people can buy something that looks almost as good at a lower price," and so on. We try to show our sales outlets why we should have the higher price, but to no avail. It means that we either have to meet this competition or else go down with those companies who will not meet the changing times.

We did just what they say a ship does when it's in danger. We threw everything overboard to get those costs on the cheap lines down to a point where we could at least break even. We had been accustomed to the larger margin of profit and so could not at first grasp the significance of

the lower priced article. We eliminated some of the sanding, we tried to dispense with filling, sanding between coats; tried to get by with fewer coats of material. These are some of the things we did in the finishing room, besides the short cut we tried in the various other departments. The factory had its back up against the wall and we were almost desperate to get those costs down.

Did we succeed? We certainly did not. Of course the costs, as shown by the article going out of the plant, showed a small margin in our favor, but the story was not finished. The jobbers were accustomed to seeing our very good lines and the comparison in workmanship and finish was so poor that complaints poured in. Merchandise was returned and many pieces had to be replaced.

### Improvements We Made

In the meantime, we were making improvements. We learned to buy dimension stock, and so reduce our millroom costs. We used jigs and forms extensively, and replaced men with boys in some instances. Portable machines came into the plant and for certain purposes proved more useful than the larger machines.

Improvements were made in the finishing room. Flat lacquers and varnishes entered into consideration. Girls replaced men for sanding and other light work. Other finishing materials companies, besides the ones we had been buying from, were invited to come into our plant and check up with us all possible means of making improvements in our products.

Out of chaos came order. Standards were set and improvements were noticeable. Complaints were reduced and the margin of profit, while not by any means what it formerly was, showed signs of arriving at a point where quantity production would mean a real net profit. But still the number of complaints was too high.

### We Analyzed the Complaints

The noticeable thing about the complaints was that they were, in most instances, what our men called "trivial." That was the first thing we had to eliminate. Every complaint was "important." Our men's attitude had to be changed. Too often they would say: "That man is crazy. I checked that article myself and it was perfect when it left here." The same remarks were made about shortages. That feeling was changed, and it helped.

Every complaint was recorded. Every rejection from the packing room to the finishing room, from the finishing room to the cabinet and assembly room, and from the turning department to the millroom was entered on a report that reached the superintendent's desk every day.

The troubles divided themselves into four divisions. First, those complaints due to faulty designing. Second, poor construction; third, shortages in shipments; and fourth, inferior finish. Adequate steps were taken in each instance to reduce the shortages, improve the particular design and eliminate the faulty construction. Then we checked the finish.

The surprising part of the whole matter was the number of complaints charged to the finishing room that did not belong there at all. Back in the mill, in the turning room, and in the assembly room—there was the origin of some of the troubles. Naturally, the finishing room, being the last manufacturing department re-

ceived the lion's share of abuse, but it did not deserve all that it got.

We found out one thing. Many of the departments were afraid to complain about workmanship coming from the previous department on account of "getting in dutch" with the other foremen and men. They were bluntly told to either do that or some one else would be in charge of their department. Another weakness was the lack of standards.

**Woodworking Standards Set**

We took every job and article that was manufactured regularly and established a standard for that line. First, no lumber could be used that was not kiln dried. No exceptions whatsoever. No dry lumber, no shipments! It was up to the management to have sufficient dry lumber by hook or crook and, in the end, things shaped themselves so that by buying dimension stock for standard articles, the drykilns and millroom could take care of all specials and those items not manufactured regularly in large quantities.

Every flat piece of stock went through the drum sander, and in addition, every top was belt-sanded at least once. Parts for the "better lines" were sanded again, and the higher-priced articles were sanded and steel wooled again at the bench during assembly.

Every hand turning was sanded and polished at the lathe. The automatic sander takes care of all turnings made on the automatic turning lathe, with the lowest-priced lines getting as many sandings as our higher-priced lines formerly received. The better lines are sanded more than formerly. This operation costs us the least of any one particular operation in the plant, and it has done more to increase the appearance of our finished product than any other single operation.

**Finishing Methods Stricter**

In the finishing room the "filled jobs" stand overnight before receiving the first finishing coat, regardless of urgency or demand. "Cannot be helped. Do you want a first-class job? Then it has to be filled and dried properly before the next coat is applied." It is hard for one to realize how much argument and how many times I have been criticised for taking an arbitrary stand, and still the few times that I relented, troubles resulted.

All merchandise was sanded between the first and second coats. We have added another sanding between the second and third coats on the low and medium-priced lines, and on the better-lines sanding between the third and fourth coats, which usually is a flat lacquer. On certain work, the last coat is clear lacquer, hand rubbed.

We have adopted lacquers exclusively on our display fixtures. The speed in drying eliminates the gathering of dust which formerly happened occasionally when other materials were used. The sanding sealer now furnished us makes sanding much easier and improves the ultimate finish at no extra cost.

All standard colors are purchased ready to use. The finishing-materials manufacturer can mix his colors in quantities sufficiently to hire skilled help and, at the same time, have definite standards to go by. Guess work and chance, such as was formerly used, have no place in making up colors or any other product.

### Changes Banished Complaints

Other changes have been made. In many instances they were trivial in themselves, but all adding to the betterment of the merchandise and product. Besides the improvement and changes in the products and methods used, we were compelled in several instances to make changes in the personnel of our organization.

It just seemed impossible to make some persons understand that changing conditions demand changes in manufacturing, and when they could not be brought around to the new order of things it was necessary to dispense with their services.

All the improvements and changes outlined have eliminated most of the complaints. The surprising thing is that the additional cost, as shown on our records, is very small, because with the passing of time the natural increase in efficiency has just about offset the additional cost of the new operation.

Now, when a new product is contemplated, we assign it to the class in which it is to be placed, adopt a standard for design, construction and finish, and then do not worry if our costs do not come out right on the first run. We know that we can bring that down without sacrificing the quality, and so the standard stays up, the costs are down and the complaints are reduced.

---

## What Causes Pinholing

This is a fault usually found only with varnish. The surface contains small holes that look like they might have been made with a pin point. These holes usually appear over the pores of the wood and are probably caused by gas escaping after the film has become too dry to flow but still not hard enough to prevent the gas from breaking through. Another cause is unfilled pores; the varnish sinking into the pore instead of making a continuous film over the wood.

Glue in the pores of veneer oftentimes contains gas which will cause pinholes. Some kinds of veneer have smaller pores which, as a rule, are less apt to admit glue. Either a better grade of veneer should be used or the veneer should be laid so that it will not admit excess glue to the pores. It is well to thoroughly dry the veneer before filling it. If there is undue moisture in the veneer before it is filled, it will later escape, leaving an improperly filled pore.

Sometimes the wood pores become filled with the dust from sanding. This dust should be removed before staining; otherwise an improperly filled pore will result and be a contributing cause to pin holes.—R. J. Fairburn.

---

### *To Manage Evansville Branch for V. J. Dolan Co.*

V. J. Dolan & Co., 1830 N. Laramie Ave., Chicago, Ill., has appointed Mr. Leonard G. King to operate the Evansville, Ind., office of this company. Mr. King will cover Southern Indiana, St. Louis, Mo., and Kentucky.

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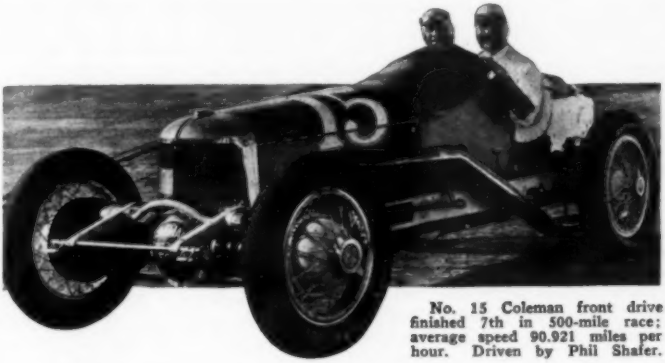
### *Durability of Exterior Paints*

The Educational Bureau of the American Paint and Varnish Mfrs. Assn. has published "The Durability of Exterior Paint of Wood Surfaces," a 54-page pamphlet with illustrated studies of construction defects and other factors that influence the durability of paints. Obtainable from the Institute of Paint and Varnish Research, 2201 New York Ave. N.W., Washington D. C., it is identified as Circular No. 361.



No. 15 Coleman front drive finished 7th in 500-mile race; average speed 90.921 miles per hour. Driven by Phil Shafer.

# Finishing and Lettering Racing Cars

*By*
*C. W. SALMONS*

**Finisher for Coleman Motors Corporation explains how the aluminum bodies of two entries in the 500-mile Memorial Day race were cleaned, lacquer-finished in color and lacquer-lettered for durability, decorative effect and identification**

TO FURTHER demonstrate the merits of the Coleman front drive used on Coleman 4-wheel drive heavy-duty trucks, we built two special racing cars at the plant and entered them in the annual 500 mile classic at Indianapolis, employing the same driving principle on these racers as we do on our trucks. Each car has an engine of 183-cu. in. piston displacement, two carburetors, 4-wheel brakes, a wheelbase of 102-in., and weighs 1800-lbs. With the exception of their engines, the cars were made and assembled at our plant—The Coleman Motors Corp., Littleton, Colo.

Our purpose in entering these cars in the big race was to demonstrate the dependability of the Coleman front drive assembly, and incidentally advertise the plant and its regular product. The finish on these racers was a particular job, because we wanted durability, smoothness, luster and beauty—all of which help to reflect favorably to our product.

### Aluminum Bodies

The bodies were aluminum, hand formed and welded, and required different cleaning and finishing treatment than the steel frames and cabs for our regular line of trucks.

The aluminum bodies of these racing cars were first thoroughly cleaned with chemical cleaner, then rinsed, dried and finally washed again with lacquer

thinner. When the thinner wash had evaporated, the cleaned surfaces were primed with lacquer primer. After drying half an hour, the primed surface was sanded and spot glazed with lacquer glazing putty; next it was sprayed with lacquer thinner to flow out the paint marks.

### Four Coats of Lacquer

Four spray coats of lacquer followed, allowing 30 minutes for each coat to dry, and rubbing between coats. After the last coat had been sprayed, the surface was carefully and thoroughly polished by hand. One of the cars was finished white, the other black. The chassis were cleaned and finished in practically the same way except that the chemical cleaner was dispensed with, the metal surface being washed only with lacquer thinner.

Cars entered in the 500-mile Memorial Day race are identified by numbers, starting with No 1, the numbers being allotted in sequence on a basis of "first come first served" in regard to entrance applications. The Motor Speedway officials require that each car's number appear in large figures in three places on the car body—on the left side of the hood and on both sides of the tail. The Speedway furnishes an expert sign painter who paints these figures on each car a few days before the race, the car owner or driver being given his own preference as to color and some slight choice as to style of figures, which, of course, must be large and legible.

### Painting the Numbers

The painter who has been doing this lettering for the past several years recently changed from paint to lacquer, chiefly because of the rapid drying characteristics of lacquer.

The surface on which the number is to be painted is thoroughly cleaned and the number is painted, beginning with a first coat and working around the car, so that by the time the painter has painted all three numbers the lacquer on the first one is dry and ready for another coat. Each figure is given three coats.

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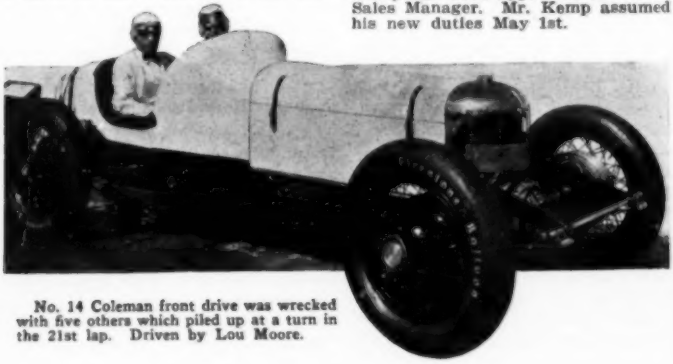
### *Kemp Is New Sales Manager for Ohio Varnish Co.*

The Ohio Varnish Co., Cleveland, Ohio, announces that Mr. George H. Kemp has been appointed Industrial Sales Manager. Mr. Kemp assumed his new duties May 1st.



No. 14 Coleman front drive was wrecked with five others which piled up at a turn in the 21st lap. Driven by Lou Moore.

# Spraco Industrial Finishing Equipment

The patented design of the spraying elements (needle, nose and spreader) provides close, accurate spray control over the entire travel of the needle and guarantees even distribution and uniform shape down to the point when the needle closes. Streaks and irregular spots or blobs are eliminated, a uniform spray pattern is obtained.

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Pressure containers can be supplied for one or two guns and with or without air motor-driven agitators. Insert containers permit refilling without loss of time or quick changes from one material to another. Standard sizes are 1½, 3, 5, 10 and 15 gallons. Tanks up to 50 gallons can be supplied.

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Spraco booths economically and efficiently remove the fumes and vapors encountered when spraying articles in one location. Sturdy, all-metal construction they satisfy underwriters' requirements and meet all state regulations. The standard flat sections are easily shipped and erected, and the size of the booth can be changed at any time by adding or taking out sections. Fan outlet can be placed at back, top or side. Induced draft booths can be supplied when required.

Booths can be supplied any size

Please send a copy of Bulletin I-130 describing the complete line of Spraco guns, tanks, booths and other accessories for industrial finishing.

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116 Central Street Somerville, Mass.

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# Colors and Finishes at Aircraft Show

*By*
*D. O'BRIEN &*
*B. CALDWELL*

**These notes by Experienced Aircraft Finisher O'Brien, followed by those from Reporter Belle Caldwell, reveal some interesting and colorful high lights of the New York Aircraft Show**

IF THE SUCCESS of a show is measured by the number of products displayed and the crowd attracted, then the Aircraft Show at Madison Square Garden in New York City was a success. This show—held in the house that Rickard built, the scene of many championship fistic encounters—was authorized by the Aeronautical Chamber of Commerce of America, and was eight days in duration—May 3 to 10 inclusive.

I visited the show primarily to study the finishing; I was in quest of something new in the decoration of planes and wanted to see what the manufacturers of finishing products had to offer.

An amphibian named "Kingfisher" designed by Mr. Philip E. Taft, and manufactured by the Whittelsey Mfg. Co., Bridgeport, Conn., was a particularly interesting feature at the show. Flying boats and amphibians generally have metal hulls, but the hull of the "Kingfisher" was made of spruce wood finished natural—just four coats of varnish; no stain or color except a 1-in. water line done in vermilion.

The wing construction consisted of wood spar and ribs covered with fabric, which in turn was treated with five coats of clear dope, over which was applied one coat of varnish.

The wood hull impressed me as being rough and not imposing, thus detracting from the other valuable merits of the craft. This I mentioned to the designer, Mr. Taft, who invited criticism instead of resenting it. Mr. Taft informed me that the craft was handmade, but that with the aid of up-to-date wood finishing machinery it would be a fine looking craft—and I agreed with him.

### Much Color in Evidence

Color predominated at the show, proving that the aircraft manu-

At top of page: Sikorsky amphibian, the Majestic.

facturers are alive to the fact that color is a real sales factor.

Among the many interesting exhibits was the Eastman Flying Yacht—a smart looking craft with a metal hull, but unfortunately devoid of color. The beauty of this craft would be further accentuated if the hull were finished in color. The wings were fabric covered and finished with a beautiful high-gloss yellow lacquer.

Other aircraft, I noticed particularly, included the following:

TRAVEL AIR: Black fuselage; wings finished with a copper lacquer; something new, unique and quite attractive.

THE FLEET: Blue fuselage, yellow wings, a high-gloss lacquer.

BELLANCA: Burnt orange with black stripes . . . . lack of harmony and contrasting colors . . . does not do this splendid plane justice.

RYAN: Blue fuselage with cream wings.

IRELAND: An amphibian; hull a two-tone green, black water line, wings burnt orange; a very pretty craft whose complimentary colors and workmanship could not be criticized.

MONO: A monocoupe; entirely yellow with blue stripes; not so effective.

NEW STANDARD: Its trimness lost because of a single color scheme of yellow which does not show the true size of the ship; wings should have been a contrasting color.

LOCKHEED: Black fuselage; wings international orange; decorated very tastefully with stripes of vermilion—truly a beautiful ship. Its high-gloss lacquer job was a masterpiece.

BUHL: Black fuselage, orange wings, a dull finish.

WACO: International orange fuselage, cream colored broad line edged with black, aluminum wings, black struts and landing gear; a very nice job.

CHANCE VOUGHT: A high-gloss lacquer job, royal blue fuselage, international orange wings: a beautifully finished craft.

SWALLOW: A lovely high-gloss lacquer job of cream and yellow.

SIKORSKY: A dream in navy blue with cream stripes, a very beautiful high-gloss lacquer job.

CONSOLIDATED: The "Commodore"; an amphibian, hull cream, black stripes, wings orange.

SAVIO-MARCHETTI: Amphibian; hull aluminum, water line black, aluminum wings.

FOKKER: A wonderful plane in red; fuselage decorated with an Indian's head (decalcomania) at mid length of an arrow in line of flight, and stripes of gold and black; aluminum wings; one of the prettiest ships at the show.

---

*Editor's Note:* Further comments furnished by Belle Caldwell, who also visited the show, follow:

Color's part in merchandising and stimulating interest in airplanes was conclusively proved at the New York Aircraft Show. In fact, the finish combinations and colors were on a par with the intense interest manifest in mechanical developments and design.

First prize for the most beautiful plane was awarded to the giant 32-passenger Fokker F-32, the largest plane built in the United States—with a wing span of 92-ft. The color scheme is maroon, with silver wings and aluminum-colored "pants" (wheel guards) on the undercarriage.

One of the most colorful planes was a Fokker F-14 in green and silver; the leading edge of the wing scalloped in green with a red stripe—and the long graceful

fuselage trimmed in a similar manner.

SIKORSKY: Amphibian; holder of the world's record for altitude and speed; a blue hull and ivory hued wings, trimmed in blue; tail surfaces of ivory and outriggers of blue.

A new baby Sikorsky, exhibited for the first time, was finished in green and gray with silver wings.

A Commodore flying boat; battleship gray with red and black trim on the ports and windows, wings of a deep orange.

A Curtis Condor was finished dull gray with blue trim and wings of yellow.

The trend toward monoplanes was particularly apparent, especially in the larger craft, the average being about three monoplanes to one biplane. Interior finishes were luxurious, especially in the large passenger planes.

Much of the cabin interiors was finished in aluminum and leather. The woods used were chiefly mahogany for finish work, especially in interiors; spruce for bracing material, plywood for wings, etc.

One large propeller that stood out conspicuously for its beauty, was finished in natural mahogany, with a light wood striped effect and with considerable copper protecting the ends and edges.

Non-shatterable glass was used almost entirely in the planes exhibited.

The Curtiss-Wright planes are equipped with a special soundproof material that encases the passenger cabin, eliminating the discomfort of noise and vibration, and making it possible for passengers to converse in normal tones while in flight.

# Lacquer Blushing; Its Causes and Prevention

*By*
*R. J. FAIRBURN**

**Reviewing some of the principal causes of lacquer blushing and explaining what practical and effective methods the finisher can use to prevent or eliminate this undesirable condition**

LACQUER FILMS, while still wet, will sometimes turn white or have a grayish color. This is commonly called "blushing." The most common cause of blushing is the presence of moisture which precipitates a portion of the solid content of the lacquer; causing it to be out of solution. This moisture may have been on the surface to be finished, in which case the remedy is to permit the surface to become thoroughly dry before applying lacquer.

### Excessive Moisture

More often the moisture will come from the air compressor. It is common practice to have the air intake extend to the outside of the building. If the air is cooler outside than inside, a portion of the vapor will condense and, collecting in the air line, be blown onto the work. For this reason

*Sales Promotion Manager, Brevolite Lacquer Co., North Chicago, Ill.

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## THAT HOLD CUSTOMER CONFIDENCE

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THE pioneering spirit which has lifted Zapon Pyroxylin Lacquers to their present pinnacle of leadership, made them a standard bearer of matchless uniformity, quality and economy, is consistently pledged to a policy of progress that will hold customer confidence by sheer reason of superiority.

Absolute control over basic raw materials and chemical processes give Zapon an unrivaled advantage in continuous advancement, service and leadership.

*The facilities of our Service Laboratory equip us to work out any finishing problem and enable us to render you valuable assistance without cost.*

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it is necessary to have a filter on the line leading from the compressor to the spray booth. Each filter is equipped with a drain cock which may be opened from time to time, permitting the accumulated water to drain out. Such a filter is inexpensive and is essential to good spray work. The air pressure regulator, at the spray booth, must also be drained regularly to prevent an accumulation of water.

In extremely humid weather, blushing is most persistent—even though care is used to keep moisture out of the lacquer and the surface to be coated. The air contains so much moisture that it mixes with the lacquer as it leaves the spray gun, thereby causing a blush.

At a given temperature, a cubic foot of air will hold just so much moisture without causing it to condense. Increase the temperature and the same cubic foot of air will be capable of holding much more moisture. The proper thing to do, then, is to increase the room temperature so that the relative humidity will be lowered and the moisture will be less liable to condense and mix with the lacquer.

### What "Blush Retarder" Is

As an added precaution, it is well to add a small quantity of high-boiling solvent to the lacquer. It will stay in the film (before evaporating) long enough to dissolve any solids that may have been precipitated. These solvents may be purchased from any manufacturer of lacquers, as "Blush Preventer" or "Blush Retarder." Ordinarily a quart to each five gallons of lacquer will suffice.

Blushing also may be the result of lacquer having stood until part of the solvent for certain of the solids has evaporated, permitting that particular constituent to drop out of solution. It is then necessary to add enough of the proper thinner to re-dissolve this solid. A solvent for one solid will probably not be a satisfactory solvent for another.

For this reason the lacquer manufacturer will so balance his thinner that it will properly dissolve all solids in his lacquer. This same thinner might not be at all satisfactory for a different lacquer. For this reason, it is well to use the thinner recommended by the maker of the lacquer. This is particularly true when blushing has been encountered.

---

Finishing materials are not temperamental where conditions are right.

---

### *Du Pont's New Varnish Plant*

E. I. Du Pont de Nemours & Co. Inc., Wilmington, Del., announces that a new varnish making unit, with a maximum capacity of 5,000,000-gal. yearly, has been put in operation at 35th St. and Grays Ferry Ave., Philadelphia, Pa.

---

### *DeVilbiss Spray Line Catalog*

The DeVilbiss Co., 294 Phillips Ave., Toledo, Ohio, has published catalog "PB" which illustrates and describes the complete line of DeVilbiss spray painting equipment and features a number of portable outfits for all requirements. The catalog contains 28 pages, size 8¼x10¼-in., is printed on coated stock, and is profusely illustrated.

---

### *Mixing & Grinding Machinery Storms-Harvey's Catalog*

Storms-Harvey Equipment Co. Inc., (mixing & grinding machy.) 50 West Third St., New York City, has published a catalog on a complete line of mixing and grinding machinery, tanks and handling equipment, and mixing and paint room accessories.

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Factory — Rochester, Pa.

# Furniture Style Suggestions From France

*By*
*LA VERA*
*ANN POHL*

**Industrial Finishing's Color Specialist and Designer, traveling in Europe, calls attention to certain national characteristics of some of the latest French furniture, as shown in recent exhibits at Paris**

PARIS, the heartbeat and pulse of all that teems in the world of art, has opened its doors to another new season—has created space for another epoch in furniture design and history. Today,

Two pieces of typical French Modernism—chic, precise, yet colorfully interesting

we have with us a period of restive decoration, a period of subtlety, a period of excellence, a period which rightfully gains the place called "Distinction."

Paris has always been the home of threshed-out ideas, the station of weighing and balancing all new things, and again designers have been at work seeking the best. What was typical of French decoration a century ago is typical today. There is a sense of lighter hearted gayety, a sense of the more decorative, a sense of more elegance; the conception of Color.

French furniture has a lively spark, a more individualistic touch, a feeling of more intimate relationship with scintillation itself. This is not to say that all furniture created in Paris is the best. France has its share of incapable designers; that problem of weeding out the best will always remain a problem for all nations. But France understands more fluently, perhaps, with more grace and ease, the problems of arts and decoration. The taste even though decorative is clever, good, and artistic.

The accompanying illustration marked Fig. 1 shows a gentleman's desk and chair for a private office or library room. The desk is practical, well balanced and well conceived . . . no distinctly sharp corners; all edges are rounded off. It can be made of nutwood, rosewood, mahogany,

# Hundreds of concerns

## have bought thousands of gallons of these products that give results not possible with varnish or lacquer

*Here are the facts:*

1. The basic ingredient of Murphy Flexible Lacquers is not nitrocellulose but is radically different from ordinary lacquer.
2. They have a greater depth of film and build far better than ordinary lacquer.
3. We have never seen, even with varnish, a polish of higher brightness. And, unlike lacquer, the finish increases in clarity as it ages instead of fogging.
4. Instead of chalking and checking as ordinary lacquers do, Murphy Flexible Lacquers actually toughen with age.
5. Murphy Flexible Lacquers, as their name implies, are like varnish in having the plastic resistance to the expansion and contraction of wood—a notable failure of the rigid finish of nitrocellulose lacquer. They are unaffected by humidity checking, so much deplored in lacquer.
6. They give the appearance and "feel" of varnish instead of the cold, glass-like surface of lacquer.
7. Murphy Flexible Lacquers are entirely waterproof.
8. Murphy Flexible Lacquers dry as quickly as lacquer, but look and act like varnish.
9. They are more durable than either varnish or nitrocellulose lacquers.
10. They are designed for both interior and severe exterior service.

NO ONE concerned with the finishing of wood or metal can consider his knowledge complete unless he knows all about Murphy Flexible Lacquers. The simple facts about these remarkable products are almost too good to be true. The only real way to learn what they can mean to you in the excellence and economy of the fine finish they give is to actually use them in your own production.

We suggest that you obtain a small quantity of Murphy Flexible Lacquer or write to us for a demonstration.

MURPHY VARNISH COMPANY

Newark San Francisco Chicago

Essex Varnish Company, Newark
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# Murphy *Flexible* Lacquers

walnut or ebony. The surfaces should be highly polished; rubbed varnish finish preferred.

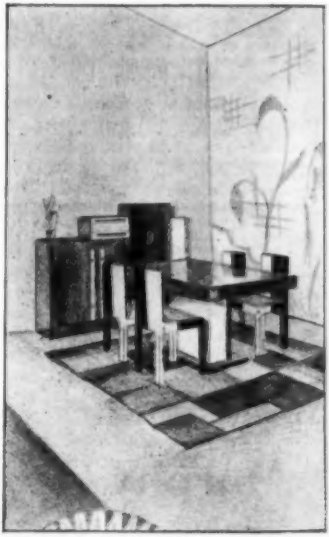
The only added decoration is in the center section which has its front panel grooved in rows of three, and each groove inlaid in metal or a light toned color, giving the desk a simple dignified appearance even though it is quite decorative. Notice that the front panels on each cabinet are made of a material or wood that shows considerable graining—preferably a long sharply defined grain. The top of the desk is glass or marble in a complementary tone. In the large cabinet one finds two side openings which are serviceable and a real convenience; they can be closed with a roller top effect or small hinged doors.

The finish on a desk of this kind requires rubbing up to a beautiful surface luster. The cabinet work must be flawless. The chair, with its cushion seat, is upholstered in leather colored to match the desk top. It has a full rounded back—is comfortable and simply planned. The back of the chair is also done in leather, the same color as the seat and inner back, but of a tone about three times deeper in scale. The legs match the desk in luster and quality of wood.

In Fig. 2, I show a dining room suite which I hope will give some idea of what is meant by the "French cheerful conception of a colorful note"—the sense of the ever French decorative spirit at play. It is not a dining room conceived by all nations. It is one typical of a certain national characteristic—done in nutwood or ebony combined with pale tan curly maple or white lacquer. Notice the chairs, each section a division of one half giving the effect of one quarter—cleverly put. The surface is lacquered to a fullness that makes it seem almost metallic. Brilliantly polished, the effect of dark tones and lights is aimed for.

Also notice the table and chairs which are as simple in form design as one can imagine; they are neither erratic nor unnatural. There is not one superfluous development in structure . . . simple and carefully treated. This is proper design in its fullest meaning. The table can be lengthened to twice its closed length. The standard is white, but the base is dark as is the top.

The buffet also done in dark and light is rhythmical in construction; the two little drawers above are for silver. The two main cabinets are for linen. The end cabinet in white is for accessories. This piece, lacquered and



Dining room table, chairs and buffet—French decorative spirit at play.

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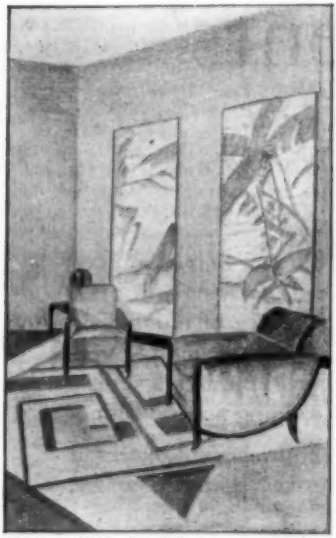
polished like the table and chairs, adheres brilliantly to all that is perfection and good in modernism.

In Fig. 3, I show a chair suitable for a living room or perhaps a conference room. It is done in suede of deep blue or green with lighter toned cushion and inner back. Suede lends itself beautifully to chair upholstery and is extensively used in Moderne decoration—perhaps because it is more durable with time and is easily cleaned.



Chairs suitable for living room—massive, restful

Velour also could be used in this piece, or heavily woven two-toned linen. However, stripes or figured materials are to be avoided in a design of this type. The bow of the lower chair body and the feet of the legs are the chief elements of decoration.

The wood is darker in tone than the chair body, but stained the same color. From the side the chair presents a more massive appearance than from the front. In reality it is about medium in this respect. Really this is another piece showing the tendency to a bigger sweep in line and a more exaggerated sense in decoration.

---

Thorough and proper cleaning is a big step toward an artistic finish.

---

### *R. E. Prince Heads New Corporation*

A new concern—the Continental Lacquer Corp.—with factories and offices in Baltimore will manufacture a full line of high-quality products for both the wood and metal trade, specializing particularly in the manufacture of lacquers, stains, fillers and enamels for furniture manufacturers. Mr. R. E. Prince has been made president and general manager of this new corporation, and the company's factories are now in operation.

Mr. Prince is well and favorably known to both the finishing material and furniture industries, having the past 15 years been associated with nationally known paint manufacturers and recently with the Berkey & Gay factories in Grand Rapids, where he organized the only scientific laboratory of its kind and instituted methods of control and standardization of wood finishing products which have become standard with the industry at large. He created a Department of Research for the study of finishing materials, and methods which involved a scientific study of standard products, methods and cost-saving features, and through this work he has developed many products of value to the trade.

The new corporation has surrounded itself with a personnel that has specialized in the adaptability of finishes to certain market localities, and in doing this has selected Baltimore, due to its accessibility to raw materials and also because of its excellent shipping facilities to the east, south and middle western furniture manufacturers. Mr. Prince is in full charge of the studio with a staff of five recognized experts who have had experience with the foremost furniture manufacturers in this country.

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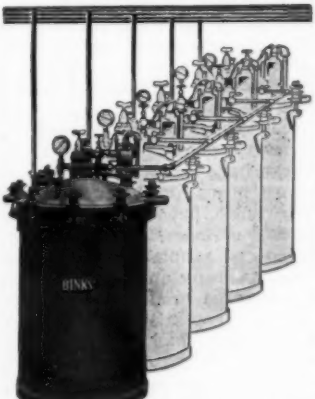

*Binks System of BATTERY TYPE Pressure Containers conveying Finishing materials by means of piping from paint storage room to Spray Booths installed in large production plants.*

Material fed to the gun from Binks Pressure Containers never varies in its flow. When Binks double-dial control is used, you not only secure positive control of the material flow to the gun, but the air pressure is controlled *separately!* Dependable air pressure you can regulate to the finest accuracy, secures any desired atomizing pressure to the spray gun. Different finishes require different materials—and different materials require different atomizing pressures. Now you can control that too!

*Agitation is Important.* Do not make your operator stop spraying to "stir" material. That costs too much - - it is not dependable. The Air-Motor Agitator keeps material agitated in a uniform consistency. Every ingredient is effectively proportioned - - every color pigment is uniformly distributed. The flow never varies - - the color never changes! Remove guesswork and you remove waste. Write us today for "Bulletin 59."

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**Representatives In Principal Cities**

# Finishing Room Design and Arrangement

*By*
*EDWARD C. H. ROTTMANN*

*Foreman Finisher calls attention to what factors influence production and economy in finishing, and exhibits his suggestions and recommendations as based upon long practical experience*

PERHAPS IN no branch of the woodworking industries has greater progress been made in recent years than in finishing departments. In the modern shop of today many new and practical ideas are used and the finishing room, and the location of the room is given more and more consideration. This is as it should be, I think, as it is absolutely essential that this department be given preference as to light, heat, ventilation, and accessibility.

### For Safety and Economy

The finishing room should be situated so that the fire hazard can be reduced and controlled; also, that lacquer thinners and naphtha fumes from the dipping tanks, etc., cannot be carried by ventilating drafts to departments using open flame or fires such as forges, ovens, and soldering equipment, or to the boiler room.

Many manufacturers look to the finishing department today, and of course realize too that in these times of keen competition this department can keep the office cost sheet from showing some jobs in the red—when other departments under the pressure of low price competition or misunderstandings have failed on their schedules and service. I believe with the best of equipment and the most modern methods, progressive firms have the best chance to operate at a profit; they have the advantage of being able to grow and survive the business depressions.

### Eliminate Unnecessary Handling

In striving for greater efficiency in the finishing departments, it is necessary to watch not only wastage of materials, but to avoid any unnecessary handling and moving of the work as it comes through the departments, from the first to the last operation. This last is always an important factor. In small pieces of stock work, where handling is reduced to its lowest terms, this may be of less importance, but in shops where a variety of large articles are produced and handled, such as building trim, bank and store fixtures, and kindred products, more man power is necessary in the handling of this work than in any phase of the wood finishing operations.

Work of this nature can be carried on trucks—especially designed to meet these requirements—from the cabinet shop through the different departments in the finishing room, to the elevator and down to packing and shipping departments. In this way there is no useless handling of the work, and it moves faster; time is saved, space is saved and

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PENTEXEL, to a most remarkable degree, makes it possible to maintain or improve the quality of a lacquer while reducing its cost. Lacquer manufacturers using Pentexel now, have a big advantage that will not be available when its savings are figured in the prices of all competitors.

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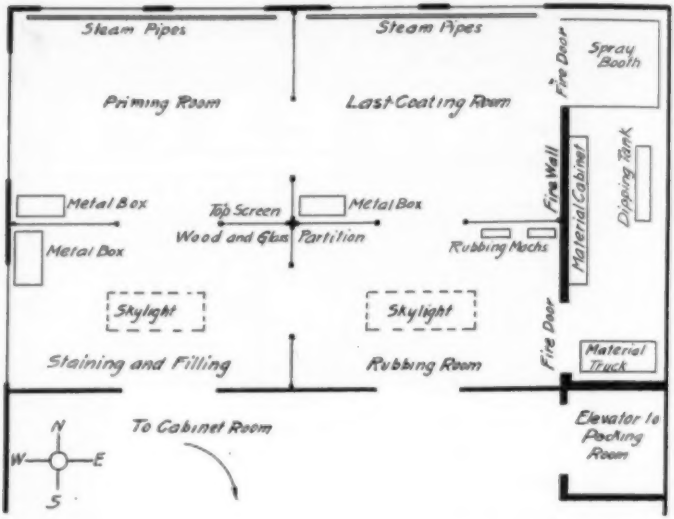


any novice can push the truck from department to department, whereas in the manual handling of large sections of finished work, more experienced help is required. A practical arrangement of a finishing department for the above mentioned work is given in the floor plan accompanying this article.

### Arrange for Good Daylight

This layout is in a given space and has a north light, with adequate windows and skylight space for the maximum amount of daylight. This gives a uniform light which is the best light for any finishing department, as the glare of the sun's rays and artificial lights should be avoided where possible, so the workmen can see their work clearly, and do it accurately and comfortably.

Good daylight, without excessive illumination from direct sunshine, is always essential in the exacting demands of toning and shading operations—more so now, I believe, than ever before because an everyday problem in wood finishing is the matching and equalizing of the different connecting members on the work. These details are important and should be carefully attended to, and made to show a well balanced uniform effect. I believe the reputation and sales of the goods produced depends upon beauty of finish as much as any other factor that enters into it.

### Painted Ceilings

Very few disadvantages are found in locating the finishing department on the top floor away from machines, dust and overhead vibrations. Here a special word might be mentioned regarding the painting of the finishing room ceiling. My contention regarding

# FLINT FLAT FINISH

Mahogany, walnut, and other close-grained woods take soft rubbed tones of unusual depth when sprayed with FLINT FLAT FINISH.

¶Tough . . . elastic . . . water-proof . . . its heavy body gives exceptional coverage. ¶ Requiring no rubbing, this varnish is ideal for efficient production where taste and distinction must be secured at no sacrifice of economy.

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this is that the extremes of expansion and contraction of the building are found at the ceiling or roof, and that water paint, being brittle when dry will chip and let loose, owing to these extreme changes of temperature and vibration. Any artisan knows what ceiling smut and dirt can do to freshly coated work.

These whitewash paints only aggravate the above conditions. Whatever wall or ceiling painting is done in the finishing department, should be done with a lusterless oil paint or enamel especially constructed for this purpose, and the paint should be light in color for the upper portions of the wall and for the ceiling.

### Heat and Humidity

A most unprofitable finishing room is one insufficiently heated or humidified. This is the direct result of a wrong arrangement, or of an inadequate heating system. The heating pipes should not be placed overhead, but near the floor lines along the walls with shut-offs, so that on mild days or during the warmer periods of the day, all but a required few can be shut off, and a correct uniform distribution of heat can be kept at all times not only for the drying of materials but for the comfort of the workmen.

A wet-and-dry bulb thermometer can be conveniently placed to be easily read, as this important instrument will determine if the finishing room is properly humidified.

With this general arrangement in effect, the work can be speeded up without a jam or deadlock occurring anywhere along the line; also it will reduce the unnecessary handling of parts to a minimum.

## Cause and Prevention of Lacquer Blooming

Blooming has somewhat the appearance of blushing, but is not to be confused with blushing, as its causes are entirely different. Blushing occurs while the film is still wet, whereas blooming appears after the film is supposed to be dry. It occurs with varnish, lacquer or paint.

Perhaps the most frequent cause of blooming on lacquered or varnished surfaces, is due to rubbing before the film is entirely dry. In a great many shops—particularly furniture and radio cabinet shops—the production schedule is speeded up so that the time for proper drying is inadequate. Here, truly, "haste makes waste." The rubbing operation roughens the soft surface, causing it to so deflect the light as to appear murky or whitish.

Blooming also may be caused by using too coarse pumice for rubbing, or by rubbing with too much force. When a painted or finished film becomes discolored by sulpher or ammonia fumes, it is said to bloom. This may come from smoke or some other cause that must be removed if the bloom is to be eliminated.

A surface that has bloomed may be restored by washing it with soap and warm water—but the soap must be free of alkali. Then it may be gone over lightly with rottenstone or fine pumicestone, and polished with chamois skin. —R. J. Fairburn.

---

It is obvious that surplus inventory is the deadliest enemy of profit and yet it seems to be a natural instinct of manufacturers and merchants to pile up excess merchandise.

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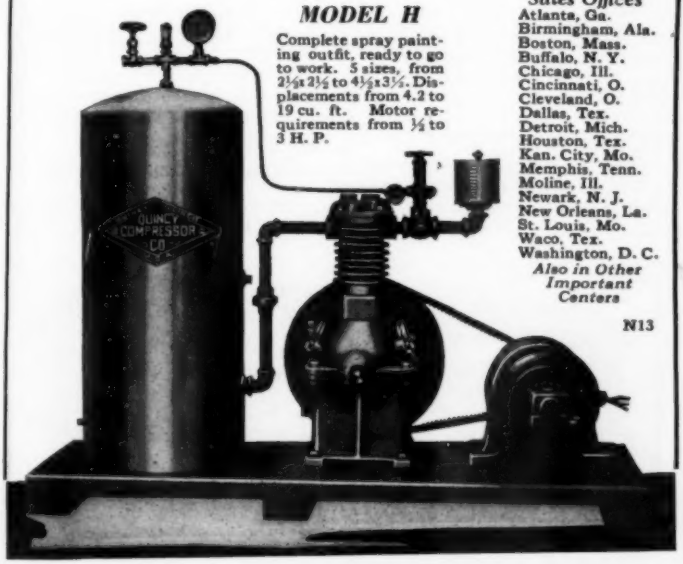


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N13

# Exhibited Caskets Finished Attractively

*By*
*W. H. ROHR*

**Brief notes about the finishes and designs featured in some of the latest and most attractive "show" caskets, as recently exhibited for public inspection at Indianapolis**

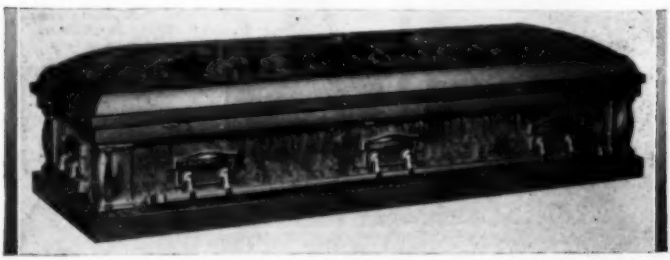
BEAUTY OF DESIGN and strikingly attractive lacquer finish effects on metal were characteristic features of many richly finished caskets exhibited by several manufacturers at the 50th Annual Convention of the Indiana Funeral Directors Assn., at Indianapolis last month. The colors in metal and metal finished caskets included chiefly gold, silver, bronze, gun metal and copper; some of these were handsomely blended with harmonizing secondary colors such as for example, gold and green, gold and rose, purity (white) and gold, blue and gold.

### Crystallizing Lacquer

Some of the metal caskets finished in crystallizing lacquer were unquestionably the most beautiful, one firm's exhibit including a casket each in orchid, gun metal, silver and copper, and gold and green. To avoid overdoing the beauty of crystallizing lacquer, this highly ornamental finish was in most cases confined to the paneling on top, sides and ends—the top panel and the broad flat surface all around the case between the ledge and base moulding. The top, ledge and base mouldings and handle bars were usually smooth, polished and in solid metallic color, while the carved ears, arms, handle-bar tips and overlay corners (the plated hardware) were usually in two harmonizing colors or attractively highlighted to give a beautiful two-toned effect.

### Wrinkle and Flame Effects

Other interesting and attractive effects in lacquered metal caskets



A metal casket finished in Pasteline gold; panels at top, sides and ends finished in crystallizing lacquer; plated hardware.

# Service that *Satisfies* Every Demand

Even the embryo business men of the younger generation, in their play, manifest a keen appreciation of the importance of service. Certainly any barber shop that cared for its patrons in the complete and prompt manner suggested by our illustration would deserve a reputation for real service — a service that ought to satisfy every tonsorial demand.

To provide this type of service for the industrial finishing trade is the definite aim of the Lilly organization. In selection of materials, in laboratory cooperation, in manufacturing efficiency, and in prompt and careful attention to every shipment ordered, Lilly service is designed to be a service of satisfaction.

Every basic material used in Lilly products is subjected to rigid laboratory tests for chemical formation and performance. Using only approved materials of highest quality, the Lilly laboratory staff develops a special formula for each finishing problem presented, which will meet most perfectly the individual requirements involved. The accepted formula becomes a matter of absolute record and approved sample is placed on file.

In manufacturing, every specification of materials and blending is rigidly observed and every shipment must check absolutely with formula and sample before it is released. From start to finish, every detail of production and shipment is properly and promptly handled, to assure you of satisfactory service in product and delivery.

Write us and let us help you to solve your industrial finishing problems. Lilly Varnish Company, 666 S. California Street, Indianapolis, Indiana.

**The Lilly spirit of service is your assurance of satisfaction in a quality finish, with absolute uniformity in the product and its performance.**

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**Finish. You'll Finish Right**

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More body and depth than most wood lacquers. Rubs with a minimum of effort.

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**3 P. M. — Second Coat 32-M**
**Next Morning — Rub**

---

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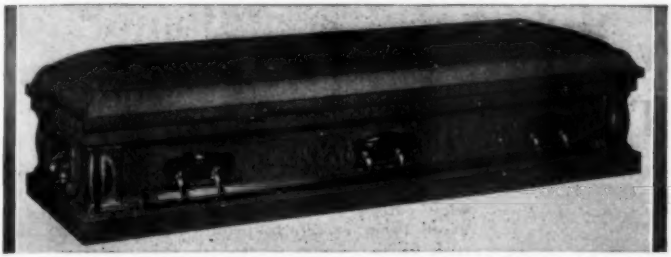

An attractive wrinkle finish in white gold; plated hardware.

included two or more types of wrinkle finishing in solid metallic color, the wrinkle finish being confined to the paneling—top panel and flat sections of sides and ends. Flame effects in both harmonizing and contrasting colors were also employed in the paneling of some metal caskets. The metal caskets in solid one-tone and two-tone polished effects, such as gold, bronze, silver and gun metal were attractive alone but completely outclassed for beauty when compared to those finished in the crystallizing, flame, wrinkle and stipple finishes.

To add a touch of color to the all-over polished metal effect in a casket done in one or two tones of light gun metal or dark silver, the surface was faintly clouded in places with traces of straw yellow and old rose. A metal casket in gilt finish was paneled in sky-blue and stippled lightly with gold.

### Natural Genuine Hardwood

Included among the few natural wood (solid) finished caskets were some of mahogany, walnut, and oak, the latter in golden (dark) and Early English (very dark). These natural wood caskets showed a real depth of finish and were hand polished to a mirror-like luster. They were fitted with metal handles and handle supports which harmonized appropriately; for example, for the mahogany, Venetian bronze highlighted; for the black walnut, hand hammered bronze effects; and for the Early English oak, wrought iron effects.

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## Colors at Foreign Auto Show

Of the 37 different makes of cars shown, at the Third International Automobile Salon at Milan, Italy, 20 were American. The leading colors were the darker ones, blue, maroon and brown being favorites. Black fenders were in the majority with a ratio of two to one. Most of the cars had disk wheels.

Of the materials used for upholstery, fancy cloth was in the lead, being represented on 67 cars. Leather and Fabrikoid were shown on 49 cars, plain cloth on 46, pile material on 25, Bedford cloth on nine, fancy leather on five and silk material on four.—F. J. Byrne., Du Pont Co.

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On a number of properties, the display of safety messages upon a large blackboard has been found an excellent means of arousing the intelligent interest of employes.

# Varnish Troubles Easy To Overcome

*By*
*C. DAN YOUNGS*

**Reviewing some of the difficulties encountered when using a varnish finish on wood, explaining what causes them and revealing what to do to avoid them . . . . to produce a satisfactory varnish finish**

ALTHOUGH the use of varnish has greatly decreased since the advent of nitrocellulose products, there are still many firms closely adhering to their first love, varnish. It is doubtful if there is any finish more beautiful on wood today than a properly varnished job over natural or stained woods.

Much has been written about troubles experienced by users of varnish due to several predominant causes, such as incorrectly used varnish, unsuitably prepared surfaces and improper choice of varnish. In this article I will briefly point out a few of the major troubles, their causes and how they may be overcome.

### Pinholing

This trouble gets its name from the resemblance to tiny pin pricks in the finished work. Invariably it shows up in the first coat, or near the pores and open grain of the wood. It seldom, if ever, appears once the varnish has become thoroughly dry—if it does not show up while the varnish is still soft. It is more commonly encountered when the grain of the wood is not straight, as in oak or mahogany rather than on such woods as walnut or similar grained woods. Certain Philippine woods are especially liable to this trouble because of the shape of the pores, which connect at the bottom in a hairpin effect.

Pinholing is caused mainly either by bubbles or gas arising to the surface, or else the opening of the pore is so large that the varnish sinks within rather than covering the surface. Proper filling will of course obviate this latter cause.

Another cause may be the failure to render the wood absolutely

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free from moisture and, as a result, the heat of the finishing room or drying room causes the moisture to come to the surface, breaking through the still undried varnish. Also the presence of grease, or any other foreign matter beneath the varnish—and improperly dried stains—will cause this trouble.

It can be completely overcome only by one thing—proper preparation of the surface and proper filling. In case it does show up, succeeding coats of varnish will not fill in the depressions nor level them off. The work must be sanded down and a coat of varnish, diluted to a thin consistency with turpentine, used to flow into these depressions so a level surface will be presented for the following coats.

### Checking; Hair Lines; Crazing

This is one of the most distressing problems presented in varnish work, for it rarely shows up until some time after the products have been sold and are in use. The average purchaser of a varnished product naturally judges it partially by the appearance, and the revelation of hair lines or checks in the finish are sadly disappointing.

These show up first in the form of hair lines, or minute lines scarcely perceptible to the eye, and gradually become larger in size until, in the extreme stage, they have the appearance of a rough alligator hide. Because of this appearance, the trouble is sometimes called "alligatoring."

The principal cause of this trouble is improperly dried undercoats, or an undercoat that has a different degree of elasticity than the subsequent coats. In other words, if an undercoat hasn't the same limits of expansion and contraction as the following coats, temperature changes or other heating or cooling will cause the one with the shortest limit of such expansion and contraction to be bound tightly by the other, and the film must necessarily break.

It is a common thing for certain individuals to blame the varnish for this trouble whereas, as a matter of fact, it is a cause entirely beyond the varnish manufacturer's control. It is simply due to a poor choice of varnishes. If a surface is moisture free and properly prepared, and if the same identical varnish is used for all coats, this trouble will never appear.

Another cause of pinholing is the application of the varnish in a too-heavy coat, in which case it is difficult for the varnish to dry throughout to an even degree. It is a much better plan to apply two thin coats than one extra heavy coat.

Again, temperature changes are often responsible for this trouble, and it is a well known fact that piano manufacturers advise against placing a piano close to a cold wall. If a varnished product is chilled and then placed near heat, the sudden rise in temperature will cause the outer film to heat more quickly than the undercoats, and rapid expansion will result in hair line checks.

### Pebbling or Orange Peeling

In appearance this trouble is somewhat like pitting, but it happens more often where the finishing material is sprayed than when it is brushed. The result is similar to the rough skin of an orange; sometimes it is called pock-marking. Principal causes: material is either too "short" or unsuitable for use in a spray gun;

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improper adjustment of air pressure or of the spray-gun nozzle.

The air pressure must be suited to both the viscosity of the finishing material and the adjustment of the nozzle. If the gun adjustment in not right and the pressure is too low, the finish will be improperly atomized; it will come out in clots which will not smooth out evenly when the varnish is set.

If the pressure is too high or the gun is held too far from the work, there is the danger of the thinners or volatile materials evaporating or being blown away before the finish hits the work. This leaves the body of the finish on the product, but there is not sufficient volatile matter left to cause it to level out evenly. Spraying in a temperature of less than 70° F. will also cause this trouble. The temperature of the sprayed material and the finishing room temperature must be approximately equal.

The remedy lies simply in correct adjustment of spraying equipment, proper consistency of material, and in holding the gun at the proper distance from the work.

### Specks in Varnish

This trouble has the appearance of dust particles on the wet product and is often attributed to dust in the air of the finishing room. This could hardly happen today in an uptodate finishing department where the air is generally comparatively clean. Despite this, however, the varnish manufacturer is accused of furnishing dirty materials and it is sometimes hard to convince the user that such is not the case.

The truth of the matter is that these specks are mainly caused by what are called skins—particles of partially dried or oxidized varnish that are in the material when it is taken from the drum or the can.

Varnishes, as we all know, are made from gums boiled at a high heat with the differing vehicles which give them fluidity. It is therefore apparent that this intense heat would melt these skins were they present during the manufacturing process. They must, therefore, have become incorporated after the varnish was cooked.

One of these causes is that many varnishes made from China Wood oil or Tung oil, when mixed with driers, will form a skin on the top of the package after it has been opened and exposed to the air for a certain length of time. If the package cannot be hermetically sealed after being opened—so as to prevent the formation of this skin—the trouble may be avoided by pouring a small amount of pure spirits of turpentine on top of the varnish.

But wherever the skin has formed on the varnish, it is not sufficient to carefully cut it off and raise it from the varnish. The rest of the varnish should be strained carefully, for some of these skin particles are so small they are almost invisible to the naked eye, especially when they are in a liquid of the same material.

Another cause of this trouble is the sanding of the varnish coat before it has become absolutely dry or thoroughly oxidized, as the still pliant varnish will curl up under the sandpaper and stick to the tacky film. Then, when the following coats are applied specks or lumps result. Carefulness in the keeping of the varnish and attention to the necessity of its being absolutely hard before sanding will obviate this trouble.

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**Always Investigate Causes**

Summing up, it can be seen that the various ailments that varnish is heir to, must be taken in a spirit of complete investigation. Blame should not be placed upon the materials until every shop condition of storage, handling and application has been thoroughly investigated.

But, no matter what the problem is, if the finisher is unable to solve it himself, the varnish manufacturer has men who are thoroughly experienced in both the manufacture and use of varnish, and the firm will gladly send such a man to cooperate with the finisher for the elimination of any annoying troubles.

It is an easy matter for someone to lay the blame for spoiled work upon the material furnished, but unless he is convinced that this is the sole cause of the trouble, he will always be experiencing difficulties without knowing just how to meet and offset them.

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# What Colors are Popular for Automobiles

*By H. KETCHAM*

**Director of Duco Color Advisory Service presents suggested color schemes and attractive decorative effects for smart passenger cars and commercial vehicles, to express individualism**

STIMULATED by the leadership of smart New York retail shops catering to women of taste and discrimination, new requirements in commercial delivery units have come into prominence. Commercial wagons are now built in keeping with the character of the establishments they represent. We no longer see shabby, boxlike contrivances whose sole merit is vested in utility, upon the avenues of our present day industrial centers. Living standards require beauty as well as utility even in the vehicles that deliver our daily needs.

Interesting new delivery units designed in keeping with present day standards were on exhibition at the recent New York Automobile Show. Built along lines not dissimilar to the best custom coach work, these wagons combined the utmost in simplicity of design with maximum utility and eye appeal through the effective employment of color.

Many present day commercial vehicles are commanding objects of beauty. No detail is too minute to escape the adequate consideration of a good designer. The same through moulding treatment that adds length, unity and smart newness to high grade passenger cars is now a standard design feature of the new commercial wagons serving the customers of smart stores in all portions of this country.

The through moulding feature and the use of closely related

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colors of a single hue (chromatic sequence) provide an effect of pleasing unity in the outward contour of the commercial car body. The same care and skill that was formerly employed to provide color schemes of charm and suitability for custom town cars or sport roadsters is now an effective requisite of successful panel delivery truck manufacturers. Style and distinction are the keynote of progress in the delivery car field.

Women are appealed to most generally by pastel shades. Where colors are combined, those tints and shades that bear a true relationship to one another should be employed in close proximity; otherwise a note of discord may entirely destroy the effectiveness of the most meritorious body design.

The multitudinous shades and tints available for commercial vehicles offer wide choice to the discriminating fleet owner and afford a rare opportunity to express individualism as well as associative value to the trademark appearance of the delivery fleet. Whether its use is identified with delivering laundry, fine millinery or cut flowers, there are appropriate colors and methods for distributing these colors that will be most serviceable and attractive.

Such greens as: Ledo green for the body panels and wheels in combination with Virginia green for mouldings and fenders, simple uniform letters and stripe in yellow violet are crisp and scintillating.

Green grays such as Congo smoke for body panels and wheels with moulding and fenders in Canyon tan stripe and lettering in pale gold bronze will prove effective.

Brown grays such as Driftwood smoke for body panels and wheels with Boone brown for mouldings and fenders with stripe and lettering in Montmartre, a deep brownish hue of orange should prove unusual and effective.

Soft, rich blues in perfect sequence such as Buddha for use with Seminole blue for mouldings and fenders accented with Silver leaf striping and lettering will prove very harmonious.

Brown is the predominating color of the fashion world at the moment and the same acceptance is accorded this color family in the automotive industry according to the Automobile Color Index, a monthly medium that reflects the trend of color released in automotive production. Cocoa shades such as Sumatra beige make a harmonious moulding and fender color when used with Paris gray for body panels and wheels.

Swamp Holly orange richly enlivens Driftwood smoke and has just the right quality for striping and lettering effect in combination with these grayish browns.

Disc wheels will contribute to the unity of the car and will help nullify any possible appearance of topheaviness if they are in the same color as that applied to the mouldings.

Fenders colored in the same shade as the upper structures will also contribute to the appearance of a low center of gravity.

In view of the present demand for attractive new browns, soft, clear Mississippi brown is suggested for upper and top structures and fenders; mouldings and wheels in soft, deep Menelaus orange with stripe in very pale yellow gold bronze on top of moulding. Lower body panels in dark, grayish beaver brown.

The increasing use of light greens of high luminosity has

made popular Bar Harbor tan, a light, yellowish hue of tan for belt, mouldings and wheels. Upper and fenders in Elf green, dark, and lower body panels in Dundee gray, light, a darker sequence value of Elf green, dark.

## Cleaning With Various Solutions

To make a surface really clean involves some actual responsibilities; it requires thorough knowledge, skilled workmanship and the use of suitable materials.

Many cleaning operations are entrusted to workmen who are neither qualified nor trained; the men are given materials and put to work by firms who take pride in their wonderfully modern plants and methods, but the results are such as to cause thousands of dollars worth of damage, which could be saved if a careful study of conditions were made.

For example, recently a large public utility company put up a problem to me to discover if there was any way of cleaning some concrete baseboards, which for years had received the scum from repeated floor mopping; the wielder of the mop had not rinsed off the surface after each mopping, and as a result it had become not only unsightly but very hard. The company had men working with wire brushes, steel wool and lye, trying to remove the hardened scum but the cost became prohibitive.

For this job I suggested using a solution made of a 50/50 mixture of carbon-tetra-chloride and benzol, to which is added one tablespoonful of ammonia to each quart of the mixture. This liquid softened and removed practically all of the scum. The remainder was removed by using borax, soap and hot water, and rinsing afterward.

When planning on cleaning any surface with water, that is using water as the carrying agency, one must take into consideration the different kinds of water. Most cities have "hard water" (water containing considerable mineral matter) made so by modern filtering methods. This water will not clean satisfactorily with soap and ammonia—even though it is hot when used—unless borax is added. Add one tablespoonful of borax to each gallon of water, and water cleaning becomes a success.

Even though natural "soft water" is used, it may contain small quantities of carbolic acid, which the borax will neutralize. Rinsing is important and it should

(Continued on page 62)

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# Fired Porcelain Enamel Finishing

*By*
*P. C. BARDIN*

**Featuring the operations and processes employed by outstanding industrial establishments—the metal cleaning and drying, the application, drying and firing of prime coat and color coats, and the use of conveyors, firing furnaces, and stenciling apparatus**

THE MARKET for metal products finished in vitreous porcelain enamel has increased tremendously within the last decade. There seems to be no limit to the uses to which these products are put. A field embracing a multitude of commodities for domestic use, ranging from stoves to refrigerators and commercial appliances such as vending machines, drug store and restaurant equipment, has been created by the demand for a finish which is both attractive and durable.

Vitreous enamel finishes may be produced in almost any desired color, or in white, with the assurance that, if properly mixed, applied and fired—the result will be a beautifully smooth finish which will not fade—and the white finish will not become yellow with age. Color and durability of finish depends largely on the kind of enamel used, correct and constant furnace temperature, and firing time.

### Cleaning Metal Surfaces

Of course, the raw metal surface must be thoroughly cleaned for this finish, for the same reasons that any metal or wood surface must be carefully prepared to receive whatever finish that is to be applied. For iron castings, the sandblast offers probably the best and most economical method of removing rust, grease or oil. Following sandblasting, the pieces should be freed of all sand or steel particles by a blow-off operation.

Pickling is the usual cleaning process used on sheet steel. This is accomplished by successive dipping and washing in (1) a chemical cleaner (alkali), average immersion time 15 to 30 minutes, (2) boiling water wash, (3) acid (sulphuric or muratic), average immersion time 12 to 15 minutes, (4) hot water wash, (5) alkali solution to neutralize any remaining acid, and finally forced drying, either in a gas-heated vat or in a drying oven. Volume of production and sizes of iron and sheet

View of rotary sandblasting outfit for cleaning metal surfaces.

# Saves $5,508 a Year

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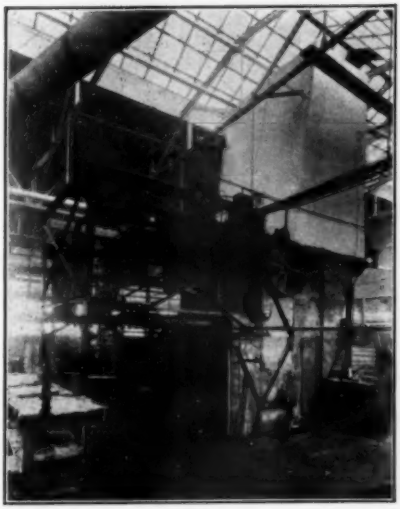
first of its kind ever built, speeds up finishing, and makes big reductions in labor, heat and space.



John P. Morgan, vice president of the Gemmer Mfg. Co., Detroit, says: "Our Kirk & Blum 70° continuous conveyor enameling oven saves floor space, occupying only 8 x 15 ft., one-tenth as much space as occupied by our old ovens; totally enclosed, we are never troubled with dust; heat is supplied by electric units, and the maximum current consumption is only 44.8 KW; these advantages and others not mentioned, combine to give us a yearly saving of $5,508."

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KIRK & BLUM

Industrial Finishing Equipment

View in the pickling room where steel parts are chemically cleaned to prepare the surfaces for finishing.

steel parts govern the specific type of metal cleaning equipment.

### The Prime Coat

Because of their weight and shape, it is usually impractical to dip iron castings, hence the prime or ground coat and all succeeding coats are applied by spraying. Each coat is dried thoroughly before firing, preferably on a mechanical conveyor that passes through a continuous drying oven. Depending upon the finished surface area and the shape of the casting, an average of 15 minutes at 160° F. is necessary to dry freshly applied coats of enamel preparatory to the firing.

Oil, gas or electrically-heated muffles, equipped with automatic loading and unloading devices, are used to fire each coat of vitreous enamel, the time required being from 10 to 28 minutes at temperatures ranging from 1200° to 1400° F. Small or thin castings in light colored enamel receive a shorter firing period at lower temperatures than heavy castings in dark colors.

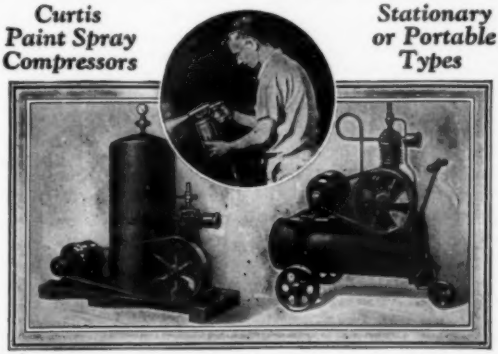
The prime or ground coat of enamel is generally applied to sheet steel parts by dipping. Each succeeding color coat is applied in the spray booth. Each of these coats, including the ground coat, must be dried before firing, this operation being done as in the case of iron castings in a continuous drier.

After the ground coat has been fired, and immediately following the drying of the first and second color coats (being the second and third coats applied), steel parts are taken to the brushing department where, by the use of hand brushes or power buffing wheels, each of these color coats are in turn removed around the outer edges of the steel part, around all openings such as bolt holes and shaker openings in coal stove fronts. Brushed surface areas reveal the ground coat which becomes the final coat on these specific portions of the part. This is done to promote durability of the finish at points where excessive wear is likely to occur and where pressure will be exerted on the

Two men at work in a double spray booth, which is served by conveyor cars operating on a loop track that passes through a continuous drier.

*Curtis Paint Spray Compressors*

*Stationary or Portable Types*



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Curtis Paint Spray Compressors

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Check items interested in, write name and address in margin and mail

finished surface during assembly of these parts.

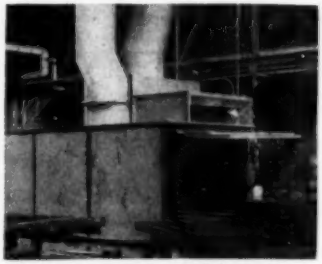
### Stenciling

Stenciling of names and trademarks is done just before the final color coat is fired. Both solid and open design stencils are used, the process being to remove by brushing the color coat from around the stencil design, revealing the previous coat—which has been fired before this operation takes place.

Steel parts requiring an imitation wood grain are given this treatment, generally by the rubber roll method, immediately following the firing of the last color coat. This graining coat should be fired for 1 to 2½ minutes at 1500° F., the time depending upon the size of the part and the surface area covered by the imitation wood grain.

### Furnace Fired Finish

In a plant where both iron castings and steel parts are finished and where the volume of production is sufficient, it is advisable to operate separate furnaces on the two classes of products, because of the variation in firing time and temperatures necessary to fire the finish on the two different metals. I have seen a single electrically-heated muffle used to good advantage for firing both iron castings and sheet steel by a carefully planned production system, but the single-end continuous electric furnace is best suited to firing sheet steel where both a high quality finish and volume production are desired.



Entrance to continuous drier, with part of conveyor loop and two cars appearing in the foreground; top of spray booth appears in background at right.

This type of furnace, with its long annealing oven which is virtually the entrance and exit of the furnace proper, offers probably the most uniform, constant and easily controlled firing medium of the various types of furnaces in use today. My reasons for saying this are: First, the temperature of the electric furnace is automatically controlled to any desired temperature within the range of the heating elements of the furnace. Second, uniformity in temperature is obtained both by the automatic heat-control device and the long entrance tunnel or an-

View of an overhead conveyor from which are suspended racks that carry spray-finished parts through the drying oven.

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An idea of the extent of their use in industry may be had from the following partial list of different types of manufacturing plants that install them to improve finish of products and at the same time increase output.

1. Absolute Control.
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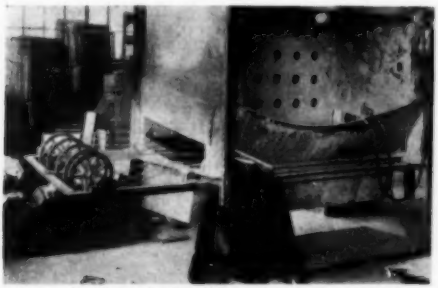
NEW YORK CLEVELAND CHICAGO PORTLAND, ORE.

nealing oven through which steel parts travel in and out of the furnace, thereby eliminating the opening and closing of the furnace door which, in the muffle type, will cause a fluctuation of 20° F. or more, depending upon shop temperature and the length of time the door remains open to unload and load the furnace.



Spray booth equipped with chain conveyors to carry steel parts through the booth while the spray operator sprays them.

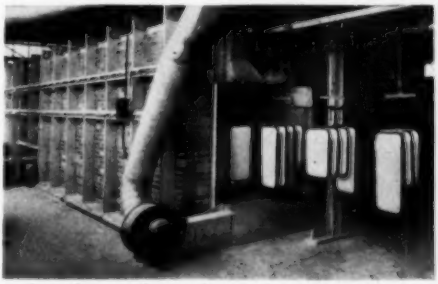
Third, constant firing time is accomplished automatically by the unvarying speed of the mechanical conveyor which carries the steel parts in and out of the furnace.

I do not want to leave the impression that the single-end continuous electric furnace is the only type of furnace that will produce satisfactory results in firing vitreous enamel finishes. I have seen both gas and oil-heated muffles used in firing finishes on both iron castings and sheet steel, and the results were highly satisfactory. These muffles are less expensive to operate, require more careful attention and have less capacity than the continuous electric furnace.

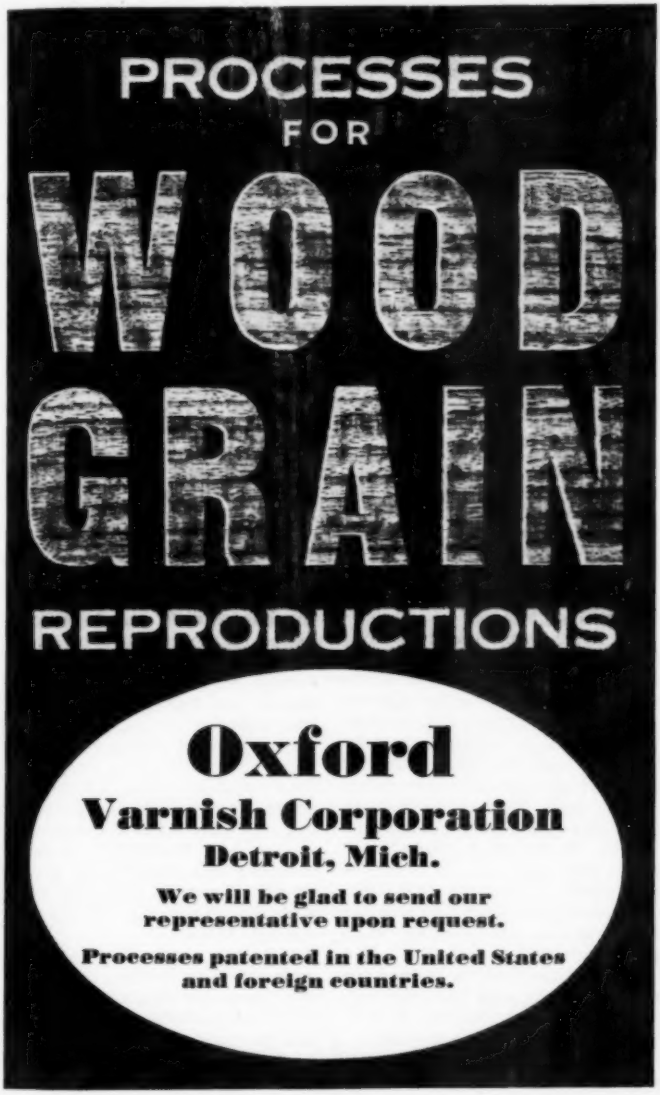
### Time and Temperature

The ground coat on sheet steel is generally fired for 2½ minutes at 1600° F., the second and third coats 2½ minutes at 1500° F. each. It must be borne in mind that all of the firing and temperature schedules given herewith are averages based on a number of plants in which various size parts are finished in different colors of enamel. Both time and temperatures should be regulated to conform to the size of the parts to be finished and the color of enamel used.

Selection as to the type and quantity of equipment depends upon the size of the plant, volume of production expected, and the class of parts to be finished. I have seen satisfactory finishes applied on a single unit in a clean well-arranged little plant, and again in one of the largest electric refrigerator plants, where the entire finish is applied on mechanical conveyors that pass through



A modern continuous furnace for firing vitreous porcelain enameled parts. Notice the trolley system and carriers; also the ventilating system.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spray booths, driers, brushing tables and finally into single-end continuous furnaces from which the parts emerge to be air cooled and again pass through consecutive operations.

After all, in this industry just as in other industries, the quality of finish produced depends upon careful production methods, correct firing schedules, frequent inspections and extreme cleanliness rather than upon types of equipment and elaborate layouts—but modern methods and equipment are keynotes to successful and economical production.

---

## Cold Patching Porcelain Enamel

In the metal finishing department of a refrigerator cabinet factory where I once worked, one of the problems we were confronted with was how to patch occasional small nicked or chipped places in the glass-like porcelain enameled surfaces.

We tried synthetic porcelain, stick shellac in white (burned in with burning iron) and a pyroxylin-base putty, all of which proved unsuccessful. The stick shellac didn't adhere to the surface satisfactorily, and the pyroxylin-base putty shrunk too much after being leveled out. Then I decided to touch the spots with plain white shellac cut thin with alcohol, and when this was dry, burn in the spots with white stick shellac. Result—adhesion was much better and shrinkage was complete when spot became cool. Then we leveled off the built-up patch with a naphtha rub and piece of felt, rubbing until the spot was slightly below the surrounding surface.

This treatment only built up the surface, so over this shellac patch we applied a slight glaze of lacquer-base putty, which we let harden a few minutes and then surfaced with gas or naphtha sanding. This treatment prepared the surface for the color, which was kept mixed in advance in all shades of white, varying from a white to blue, white to cream and white to gray.

A dry sample was matched to the porcelain-enameled surface; a little of this was dissolved in thinner and applied to the spot to get the correct color. By this time the spot was just about level, and all we lacked was a glass-like gloss. To obtain this gloss, we applied a light coat of a water white lacquer. We worked a little more than half an hour to complete the patching operation. We learned that if the operation is carefully performed, it is difficult to detect the position of the patched place on the surface.

Now, this was only an experiment at cold-patching a few nicked or chipped places on a porcelain enameled finish, but it was accepted by the management as the best and cheapest method of repairing small nicked or chipped places on finished refrigerator cabinets.

I have heard that a system for patching porcelain is in process of development, and I hope that by this time it is completed. I feel sure that when a satisfactory method is found, it will be accepted and appreciated greatly by all who have anything to do with the manufacture of porcelain enamel finishes.

It is not so impossible, in my estimation, to produce a stick of substance that will be waterproof, that will have fair adhesion, that can be melted at a low temperature but which will harden when cold, that will carry any tint or

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shade of any color, that can be surfaced and polished, that will not shrink when finished, and that will stand some expansion and contraction. For whoever develops such an article, a successful business is in store.—M. V. Leach.

## Cleaning With Various Solutions

(Continued from page 51)

be thorough, using good sponges and changing the water as soon as it becomes cloudy. Dry with chamois—which should be cleaned often and kept well rinsed.

If one decides to clean with gasoline, benzine, naphtha, etc. —again the quality of the material must be considered. Often the ordinary gasoline drawn from automobile service pumps is used because it is cheaper than 70-72 naphtha. This kind of gasoline contains oils and other ingredients which do not evaporate, the result being that they leave a film invisible to the eye. If finishing material is applied over this unclean surface, the finish may buckle or loosen.

In many cases fear has prevented the use of 70-72 naphtha because of it being highly inflammable. This objection can be removed by adding 1-lb. of carbon-tetra-chloride to each gallon of naphtha. When cleaning with this mixture, cloths should be washed often to rid them of lint.

Last but not least, it is up to management to properly instruct those who do the cleaning, telling them what the materials do, and emphasizing the importance of cleaning. Also, do not overlook the fact that cheap labor is dear at any price.—H. C. Mattern.

## Finishing Turnings

Since the sanding of wood turnings has been put on such a wonderfully efficient production basis, through the use of certain types of automatic sanding machines, I have often wondered whether something along the same general lines could be developed for finishing and polishing turnings. It seems to me that this would be an effective and economical way to rub turnings of various kinds, and that it would certainly be superior to the ordinary hand lathe method—J. E. H.

### *Henry Brusse Joins Valentine*

Valentine & Co., 386 Fourth Ave., New York City, announces that "Henry Brusse, who has been with the Adams and Elting Co., for the past 20 years, has joined the Industrial Department of Valentine & Co., whose General Offices are in New York. He has associated with him, Alphonse Pesci, and their combined knowledge of practical wood finishing colors and effects are now available to their many friends in their new capacity."

### *"The Story of Modern Lacquer"*

Hercules Powder Co. Inc., Wilmington, Del., has published under the above title, a booklet of 16 pages and cover, page size 6¼x9¼-in., printed in four colors. An analysis of the use and possibilities of nitrocellulose lacquers is given. A copy may be obtained by application to the Cellulose Products Dept., Hercules Powder Co., Wilmington, Del.

### *DuPont Adds to No. 7 Line*

E. I. DuPont de Nemours & Co., Wilmington, Del., announces a new cleaning compound for automotive cooling systems, marketed under the name of "No. 7 Radiator Cleaner." This product removes rust, scale, grease and sediment from the inside of radiators and other parts of the cooling system. Although powerful in cleaning action, it contains no acid or other harmful ingredients, and cannot injure the hose, packing or metal parts.

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# Questions and Answers

This service department is conducted to meet the reader's need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer any further comments or recommendations pertinent to subjects mentioned

## Grained Finishes for Air Drying

Referring to an article under the above title appearing in February issue, page 45, we would like to ask for more information on this subject.—H. J. B. Co.

There is now on the market a lacquer graining ground that is sold in either paste form or liquid form ready for spraying. This ground drys in from 20 to 30 minutes.

Another method is to use air-drying graining stain that comes in paste form. This stain can be thinned with water, and it is used like an oil graining stain. Such a stain can be retarded to almost any desired drying time by adding some glycerine; a large panel can be grained without the stain drying too soon. When dry, apply two or three coats of lacquer to complete this finish.—George Moskos.

## Finishing and Polishing Wood Turnings

Kindly tell me how to polish brush handles and floor sweep blocks on a lathe. I tried the following method of polishing but found it unsuccessful—by unsuccessful I mean there was too little shellac on the handle and little or no polish. Method used: First a rag soaked in linseed oil, then shellac added to the rag and applied to block or handle in the lathe.—K. P.

I assume that the turnings are round and have a centering hole so that the workman can push them into a revolving spindle which usually has a kick-off operated by the foot; this method makes the operation much faster. However, the following process can be performed while a piece is revolving in a lathe, only the production will be less:

It is customary to use cop waste which is the same as wiping waste except that the cop waste contains long threads so as to enable the operator to make up pads that will hold together better. After placing the turning on the spindle or in a lathe, the operator sands the piece; then, with one hand holding the pad up under the piece in contact with it and applying the shellac with a small brush in the other hand on top, move both hands back and forth the length of the piece, all the time pressing the pad against the piece. Use one or more brush loads of shellac according to the size of the piece; a little experimenting will tell how much to put on.

The shellac should have a little machine oil or something similar in it—just enough to prevent the shellac from sticking to the pad but not too much, as oil dulls the gloss. After some practice an

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operator can do this work very rapidly—if he is furnished with proper equipment so as to replace the pieces rapidly in the machine. He can also get a good gloss finish. —F. H. McLain.

---

I believe it would be best to get a dip coat or brush coat of shellac on these handles before polishing them. Try more shellac and less linseed oil on the rag or pad. You should wring out most of the oil from the rag before trying to polish, as too much oil will leave the shellac soft. If you try this and do not use the shellac too thick, I think you will find after a little experimenting that this method will give a successful polish for these handles.—J. K. Cooper.

---

## Bleaching Black Walnut

Will you let me know if it is possible to bleach real black walnut, almost ebony, to the natural color of American walnut? I have tried a few bleaching solutions and found it obstinate to any treatment.—R. C.

---

I do not believe it possible to bleach "ebony" black walnut to the natural color of American walnut. However, I suggest you try about a 10% solution of oxalic acid and apply it warm, temperature of solution to be about 54° to 72° F.—L. B. Miller.

---

## Flat Lacquer Rubbed

Relative to C. R. B.'s problem about "Rubbed Flat Lacquer Turning Gray" (May issue, page 78), I believe it is a recognized fact that flat lacquers can be constructed to meet all required sheens by omitting the rubbing operation, therefore I assume that C. R. B. wishes to give the flat lacquered surface a "smoother feel," as well as a "greater depth" of finish.

There are flat lacquers that will not turn gray after rubbing, in this locality (Kansas City, Mo.) where all preliminary conditions —such as no excessive humidity, no water in the air line, etc.—are favorable at the time of spraying, and where the spray operator does not blast the flat lacquer coat on, under terrific air pressure.—Edward C. H. Rottmann.

---

## Walnut Stain for Chair Finishing

We buy chairs from a factory in Michigan; these are finished in brown mahogany and the factory states that its finishers use an oil stain for this purpose. We have asked them to supply these chairs in walnut finish but they say they cannot do so because of the fact that they cannot find a walnut oil stain to use. They state they can use a walnut stain in the walnut color, but it raises the grain and causes extra work and increases the price of the article. Is there some manufacturer that makes this walnut oil stain exactly like the mahogany oil stain? —E. F. & S. Co.

---

If this chair manufacturer will first spray the chairs with a permanent stain* for walnut instead of oil stain, let dry four hours and, without further attention, proceed with the finishing operations, we are sure the concern will save time and money, secure better

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penetration, and a non-fading and non-bleeding color, which is especially desirable if finishing with lacquer, as no sealer coat is required. It will enable the chair manufacturer to give the customer what is wanted.—A. B. Laboratories.

## Uniforming Sap Walnut

Please advise us as to the best and most economical way of uniforming sap walnut so as to obtain the same color, or nearly so, on both sap and heartwood on the same piece.—F.S.F.B.Co.

A great number of concerns are solving this problem by using the new, so-called, non-grain raising stains which dry thoroughly in one hour. The stain is sprayed on, the lighter portions of the wood being sprayed over and over until they show the same depth and shade of color as are obtained by one coat on the darker sections.—L. B. Miller.

## Pearl Crystal Finish on Caskets

Recently I saw a finish on a casket which I would term a crystal finish. I have seen this finish in various colors but the particular finish I desire to find out about is a pearl gray or an oyster-shell gray finish blending into darker shades on part of the crystals. I would like information as to how this finish is applied and what materials are used.—B. C. Co.

If the casket in question is metal, it was probably finished in the following manner:

The metal surface was first given a coat of a pearl gray paint undercoater or primer, which usually requires an overnight dry; then, the following morning, the primed surface was sprayed with a clear crystal lacquer. Practically all of these crystal lacquers diffuse light rays, causing some crystals to appear dark while others appear light, depending upon how the light strikes them.

As for finishing wooden caskets, the materials and methods would be the same—but with this exception: the wood first should be sealed with a sealer that is impervious to the undercoater or primer. A wash coat of shellac is usually satisfactory for this purpose.

Another method is to apply a clear sealer over the undercoater or primer. This, of course, should not be affected by the clear crystal lacquer which is sprayed over it. —L. B. Miller.

## Paint for Stucco Surface

We would like to know whether a cement or oil-base paint would be the best for spraying on a stucco surface with pebble dash. We must guarantee reasonable permanency, say five years. Any comments as to the best procedure will be appreciated.—S. D. S.

Do not use anything but a paint that is made especially for cement or stucco surfaces. Before applying any paint, coat the surface with a special cement size, then follow with the cement paint. A number of paint companies have special paints which they recommend for this work and, by following the directions for the particular product's use, you can hardly go wrong.—J. K. C.

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## Dipping and Tumbling Small Pieces

We would like to have information on tumble finishing wooden pieces, ⅜-in. thick, ¾-in. wide and 3-in. long varying in size to ⅜-in. thick, 3-in. wide, and 8-in. long. There are many thousands of those pieces and if they can be "churned," it will effect a saving of many operations. We can readily understand that small round shaped pieces could adapt themselves to this style of painting, but think that the flat pieces will have a tendency to stick together.—T. H. Mfg. Co.

---

Before suggesting an answer to this, one should know what sort of finish is desired, and also what kind of wood is to be finished.

We do not believe it possible to tumble-finish a paint enamel or high-gloss finish on the size and type of pieces described, but we do think it possible to procure a semi-gloss finish in colors by the following method:

First place the pieces in a wire mesh basket and dip in a permanent stain* of the desired color. Air-dry for four hours and dump into a closed, wooden, tumbling barrel with about six pieces of beeswax 1-in. in diameter, and roll for 30 to 45 minutes. If the pieces are of maple, birch or beech, I think a fairly presentable finishing job may be secured.—A. B. Laboratories.

---

It has been my experience that wooden pieces of the dimensions quoted in the question would stick and adhere to one another if tumbled. Since reference is made to "the painting operation," I assume these articles are to be painted not lacquered.

I suggest spraying or dipping. If you consider lacquering these blocks, you will be surprised at the recent developments made in dipping lacquers. There are now on the market some dipping lacquers, very reasonable in price, which cover solidly in one dip coat, stand out nicely on the wood, leave little or no drip or fat edge, and are made to dry either dull or retain a satisfactory high luster.—L. B. M.

---

*Name and number on request.

## Linseed Oil Under Lacquer?

We contemplate using white enamel lacquers on our woodwork and are thinking of waterproofing the woodwork by applying a coat of boiled linseed oil reduced with three parts of turpentine. We hesitate to use this linseed oil under the lacquer and would like some advice on it.—T. C. C. Co.

---

I believe this method would be injurious to the lacquer, causing it either to crack or to peel off. Instead, I suggest using an oil-base primer containing enough pigment to serve as a ground coat as well as a base for the succeeding lacquer coats. After allowing the primer suitable drying time, I believe this surface will resist water. The first coat of lacquer enamel must be flat, but the second coat can be of a high luster. —George Moskos.

---

## Rubbing Lacquered Surfaces

Can water rubbing on lacquer be worked out to give a satisfactory job? How will this work out in all weather conditions? Will the drying time be just as great as for oil rubbing? Would it be neces-

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# ZELLER

sary to use a special grade of pumice, and what number would you recommend? At present, we use oil, but I see other advantages in using water. 2.—Do all lacquer surfaces scratch easily? 3—Does the friction used in oil rubbing soften lacquer surfaces?—J. D.

---

Answering these questions in the order in which they appear:

1—Compared to oil rubbing an equally satisfactory job can be had by water rubbing in the same length of time. Weather conditions have little or no effect in connection with water rubbing. The drying time after water-rubbing is one-half that of oil rubbing. I suggest that FFF pumicestone be used and followed with strained rottenstone to remove some of the scratches left by the pumice.

2—All lacquer surfaces do not scratch easily, as some lacquers have a higher content of cellulose than others (ranging from about 18% to 40%). The more cotton in a lacquer, the tougher the film. Also, some lacquers are loaded with plasticizers to permit flexibility, while others contain a relatively small amount, causing it to become almost brittle in a short time.

3—The friction used in oil rubbing, as well as in water rubbing, will cause lacquer surfaces to soften; particularly in oil rubbing, the lacquer will stay soft longest. —W. R. Beutin.

---

Lacquer can be rubbed with water successfully if you want a flat or a dull finish. I have found that by polishing with No. 000 steel wool dipped in water, and by keeping the surface wet, a satisfactory job results. This method eliminates cleaning the surface of the pumicestone after polishing. It is also much faster than to rub with oil.

I believe rubbing oil, with a percentage of water in it is a better polishing vehicle than the straight oil. After rubbing, whether with pumice or fine steel wool, clean up the polishing material from the surface and rub with a chamois. If you do not want a dull finish, a faster but presentable job can be secured by rubbing with liquid wax, and polishing.

Weather conditions should make no difference in polishing if a high grade lacquer is used. The drying time should be less, as water hardens most finishing materials. No special grade of pumice stone will be needed; No. FF is suitable for most any polishing use. The friction from rubbing shouldn't soften the lacquer if your lacquer is of a good grade and has really become dry before the rubbing begins.—J. K. Cooper.

---

Yes, lacquer may be rubbed with pumicestone and water, with the same satisfactory results as obtained by rubbing with oil, except that it will produce a very dull finish when completed, while oil rubbing gives the finished surface an eggshell gloss which generally is much preferred. Possibly you can rub the lacquered surface a few hours sooner with water than with oil, without much danger, but why rush work that way?

Lacquer that is rubbed with oil or water before the solvent of the lacquer has completely evaporated, will show a shrinkage in the film later. Better to give the lacquer 48 hours to dry, even if it is hard enough to rub in 24 hours than to have the completed work show shrinkage of film. Work that is dry enough to oil

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rub would certainly be dry enough to water rub, regardless of weather conditions.

If water rubbing is to be the practice, it would be advisable to use a finer grade of pumicestone.

Oil cushions the pumicestone to a great extent while water, being much thinner, allows the pumice to take hold better. To avoid undue scratches, a finer grade of pumicestone would give better results in this respect. Satisfactory results may be had with No. FF (2602) or No. FFF (2600), (Old and new markings.)

No, all lacquer surfaces do not scratch easily. In fact, a good lacquer should not scratch easily. If I were using a lacquer having this characteristic, I would question its durability and look for a lacquer that didn't have this fault. However, before you condemn the lacquer, check up on other steps in the finish, such as shellac and filler.

Friction from rubbing with machine or by hand has very little softening effect on lacquer that is really dry. Once dry, a good lacquer does not soften; it is entirely different in this respect from varnish. Of course, there are many lacquers containing a larger amount of gum and it might be possible that this type of lacquer would soften a trifle under the stress of rubbing.

I would suggest that you make some practical experiments with the lacquer you use.—F. W. Purdon.

---

Referring to the question about water-rubbing a lacquer finished surface, yes, this can be done without getting into trouble—if the stain and filler are dry and hard, and if there are sufficient lacquer film coats on the surface to stand water rubbing. Really,

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. . . . . .

. . . . . (I. F.)

this will prove to be the most satisfactory method of procedure, as it rubs down quicker to a smoother surface. I have never experienced any trouble with high-grade lacquers, under reasonable weather conditions. All necessary coats of lacquer can be applied in one day, and the rubbing operation follows on the next day, therefore, the drying time would not be affected. We use F.F. American ground, Italian powdered pumice in our rubbing operations.

High-grade lacquer does not scratch as easily as varnish.

The friction in rubbing has no bearing on the lacquer film gumming, but this trouble should be checked to the rubbing oils, as this can soften one of the gums used in constructing the lacquer. Good lacquer is so constructed and so balanced that this difficulty should not occur, and especially so where the resinous solids in the lacquer are of such a hard drying nature that this problem is automatically taken care of.—Edward C. H. Rottmann.

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## Decorative Finishes

We would like information on how to apply the following finishes, what materials are required and what equipment will be needed: Black and gold polychrome; Swedish iron; Early Italian polychrome; polished steel; verde green polychrome; antique rust; antique bronze; and old iron.—F. J. M. Co.

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It is a hard task to try and explain how most of these finishes are applied without knowing the nature of the article or surface to be finished.

ADVERTISING PAGES REMOVED



BLACK AND GOLD POLYCHROME: First apply a coat of black and then highlight the raised surfaces with gold bronze mixed with a clear lacquer. The gold bronze mixture is spread over a small pad of cheesecloth and the highlights are touched with it, leaving the gold in the high spots only. Red and green lacquer may be used for further trim.

SWEDISH IRON: One coat of silver lacquer. One coat of black, ground in japan and thinned with turpentine, is applied all over the silver; then the black is wiped off the high spots before it is thoroughly dry.

EARLY ITALIAN POLYCHROME: Same application as black and gold polychrome, only using a darker shade of gold bronze. Trim colors should be red and blue.

POLISHED STEEL: One coat of gray all over. Shade deep spots with black. Shade high spots with silver. One coat of clear all over.

VERDE GREEN POLYCHROME: One coat of bronze powder mixed with clear lacquer. One coat of verde green, ground in japan and thinned with turpentine, applied all over and highlights wiped off before the green dries. Touched up with the same red and blue as in Early Italian polychrome.

ANTIQUE RUST: One coat dull black. Light spatter coat of rust color.

ANTIQUE BRONZE: One coat of copper bronze. One coat of burnt umber, ground in japan and thinned with turpentine. Wipe highlights before the umber is dry.

OLD IRON: Black all over; trimmed with yellow and red. One coat of burnt umber all over (thinned with turpentine) and wiped before it is dry.—J. M. Verderosa.

(Continued on page 80)

96 GLOSS 97 RUBBED EFFECT Amerilac Lacquers

*to match*
Design and Workmanship

INFINITE care in design and accuracy of workmanship must be matched with high grade finishes to reach the measure of superiority that is required today in furniture and other cabinet work.

In the lines of many leading manufacturers of furniture and kindred products, Amerilac Lacquers have proved extremely helpful in presenting finished surfaces of lasting beauty and durableness, at minimum finishing costs. These materials have been specially formulated to fit the requirements of these trades.

Amerilac materials are more easily applied, give greater coverage, and require less sanding.

*Try Amerilac Nos. 96 and 97, and be convinced. Your Inquiries Solicited.*

The American Varnish Co.
*High Grade Varnishes, Pyroxylin Finishes, Stains, Fillers and Enamels*
1138-1146 N. Branch St., Chicago

## Finish Can Mean *So Much* To The Success of a Suite

REGARDLESS of how well a suite is built—it is hard to convince the prospective patron of its worth—unless the outside appearance also tells the quality story. If your finish is right—that's something the house wife can see and understand—an index of quality that she may expect to find beneath the surface.

Whether you build for the most exclusive trade—or produce a line to sell at a price—you can not afford to slight the finish. That is an item which can mean so much in the successful sale of your products.

One sure way to guard this quality—and assure your furniture the right first impression is to specify J-W-F Finishing Products—Try these finishes—and learn how dependable good a finish can be.

■

Jamestown Wood Finishing Co. products are guaranteed. If they will not do for you what we claim for them your money will be refunded.

■

## Jamestown Wood Finishing Company

Executive Offices and Plant

JAMESTOWN, NEW YORK

BRANCH OFFICES: Milwaukee, Wis. Meriden, Conn; New York City; Lenoir, N.C.

STAINS - FILLERS - SHELLACS
VARNISHES - LACQUERS - ENAMELS

SWEDISH IRON is a blue black. If you wish to paint the iron work to produce this you may use a good lamp black to which a small amount of white and Chinese blue have been added.

OLD IRON finish must show the hammer marks or hand-hammered effect. This, if not left in the iron color, is mostly flat black.

ANTIQUE BRONZE: Whether this means an oxidizing process or a painted finish, copper bronze is used. After the bronze is dry, a glaze coat of raw umber and turpentine with a small amount of dryer is brushed or sprayed on. After setting, it is wiped off, leaving the color in the depressions. A coat of flat lacquer, or whatever the finish coat may be, is then applied.

ANTIQUE RUST: Just what the inquirer may have in mind in regards to this is hard to tell. Anything that has aged with rust will be full of pit holes of various sizes. I have just finished an old oil lamp that was made in 1840. This was very rusty and full of pits about the size of a pinhead. This finish could be reproduced by using a thin plastic and stipple with a stiff brush after which a coat of iron color made of white, lamp black and a touch of chrome yellow medium is applied, followed by a glaze coat made of raw sienna with a touch of burnt sienna. This will produce a rust color which, when placed on a piece of iron, is hard to detect. Japan color should be used as this finish must be dead flat.

POLISHED STEEL: A fine grade of aluminum bronze will produce this effect. If rubbed with pumice, it will give an excellent polished effect.

VERDE GREEN: A brown or yellow enamel may be used as a

(Continued on page 92)

ADVERTISING PAGES REMOVED

# New Materials and Equipment

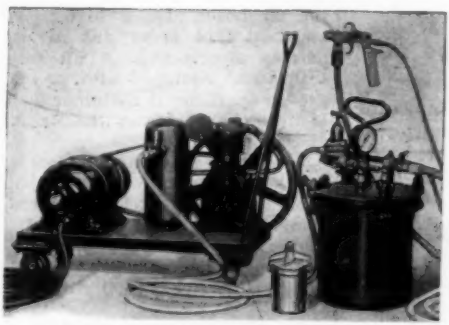
**Presenting briefly, certain outstanding features of new or improved materials, supplies and equipment which have been developed and made available for use in modern industrial finishing departments**

## Binks Portable Sprayer

The Binks Mfg. Co., 3114 Carroll Ave., Chicago, announces its new Thor 2-E portable outfit which is illustrated in this article. This portable unit has been developed to meet a great variety of requirements.

According to the manufacturer, "it is easily portable by one person, yet it is of sufficient size to produce quality work at surprising speed."

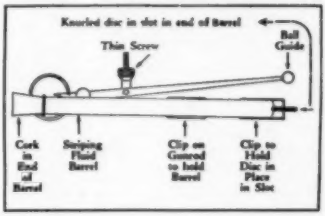
The air compressor unit is belt driven and connected to a ½-h.p. G.E. motor. It has an air displacement of 3.5-cu. ft. of air per minute. This complete outfit is equipped with the Binks No. 345 spray gun; a 2-gallon pressure material container and the necessary lengths of air and material hose.



Operates economically from any light socket.

## New Striping Tool

The E. M. Reeves Co., Flint, Mich., announces the development of a new precision striping tool called the Roll-A-Stripe—"a


Knurled disc in slot in end of Barrel
Thin Screw
Ball Guide
Cork in End of Barrel
Striping Fluid Barrel
Clip on Gunrod to hold Barrel
Clip to Hold Disc in Place in Slot

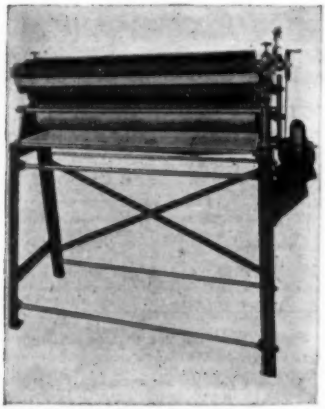
Speedy and does not require refilling.

striper anyone can use without previous experience and produce uniform true stripes. Not only can the novice get the knack of using this tool in a short time, but the striping artist will find the Roll-A-Stripe far superior to the striping brush."

According to the company's literature, "the Roll-A-Stripe is simple in construction with nothing to wear out. The width of stripe is regulated by the thickness of the disc which may be supplied medium fine and medium wide with a special

# The NAZ-DAR Coating Machine

*For Applying Lacquers, Enamels, Varnishes, etc.*



**Faster Production**
**Less Material Waste**
**More Uniform Application**
**Greater Coverage Per Gallon**

A NAZ-DAR coating machine will show improved results over hand or automatic sprays on any sheet or strip material.

**NAZ-DAR COMPANY**
**4014-22 N. Rockwell St.**
**CHICAGO, U. S. A.**

*Also Manufacturers of Silk Screen Process Paste Paints, Equipment and Supplies*


guard that serves as a guide when striping under moulding, above moulding, split moulding, hood, wheels, furniture, cabinet work and anything else you want to stripe. A special width disc can also be made to order when desired."

---

## Crown Spraying Equipment

The Crown Spray Gun Mfg. Co., 1216 Venice Blvd., Los Angeles, Calif., announces that after more than 18 months of engineering work, it has developed a new unit —Super Spra-More "44". This outfit comprises an improved type compressor, ¼-h.p. motor, and the Crown No. 12-B suction type gun with a 1-qt. metal container.

According to Mr. Henry O. Winkler, president of the company, "Super Spra-More '44' is designed and engineered to give the same degree of professional results with all materials, which are obtainable with much higher-priced equipment."

Among the features employed, which are unusual in ¼-h.p. outfits, are the following: an automatic safety starter to relieve the starting load, automatic unloader, efficient water condenser set into the air hose; also, a high-grade standard type spray gun giving perfect atomization of all materials and equipped with an improved quart metal container that is interchangeable with Mason glass jars.

Where speed of application is sought for coarser work with material not requiring fine atomization, Crown offers Super Spra-More "55"—comprising the same equipment, but with a pressure type gun instead of the suction type.

To meet the demands of work where a quantity of material

*Figuratively Speaking:*

**What's your Conception of a MILLION?**

These are days of million-dollar mergers, but not many men can comprehend such a huge figure--to draw a mental picture of one million dollars all in one pile is beyond our powers of concentration.

**Yet-**

**Over a Million Pounds Of Stille's Spee-D-Dry Wood Filler* . . . . . .**

were delivered to users in 1929. Too huge a quantity to comprehend perhaps, but of prime importance is the fact that this material must have many satisfying characteristics to reach such a sales volume.

*Our free trial offer affords the opportunity to test it thoroughly before buying . . . . . Ask us about it!*

Here is a rapid drying filler for use under lacquers, shellac and varnishes permitting application of first primer or lacquer coat within less than an hour. It penetrates deepest pores, will not pull out, does not raise grain, require sanding, shrink or crack. Is furnished in any color, transparent and natural.

Test it out NOW, and be prepared for future production needs.

**E. T. STILLE & CO.**
Main Office and Factory
2343 Greenview Ave. Chicago, Ill.
Southern Office and Factory, High Point, N. C.

*Patent Applied for, Serial No. 364,324

**Stille's SPEE-D-DRY Wood Filler**

*Finco*

**NON-GRAIN RAISING**

**Water Stain—**

requires ***no sanding . . . . . no wash coat . . . .*** saves 24 hours in the finishing room. One furniture manufacturer saves $1.50 on every dining room suite.

Positively fast to light . . . . made only from water aniline colors. Inquiries solicited. We will be pleased to demonstrate this product or send samples for you to try . . . . Our service department is at your disposal.

**Finishing Products Co.**
3725 E. 13th St. Indianapolis, Ind.

Damaskeen
THE ORIGINAL WRINKLE FINISH

*The following concerns, all located in Newark, N. J., are authorized to manufacture and sell Damaskeen finishes:—*

FLOOD & CONKLIN CO.
THE PALMER-PRICE CO.
THE BIGELOW VARNISH CO.
NEWARK VARNISH WORKS

Damaskeen
THE ORIGINAL WRINKLE FINISH

greater than a quart is necessary, the Super Spra-More "66" provides an extremely portable unit, made up of the pressure type gun and a strong rustproof 10-qt. metal container, and a generous length of hose.

## Portable Air Compressor

Saylor-Beall Mfg. Co., (air compressors, power driven tire pumps) 1501 E. Philadelphia Ave., Detroit, Mich., announces a new portable air compressor which is illustrated with this article.

A new model 150-K.

Specifications on the new compressor are as follows:

| | |
|---|---|
| Number of Cylinders | 2 |
| Bore | 2-in. |
| Stroke | 2-in. |
| Speed of Compressor | 600-r.p.m. |
| Free Air per minute | 4.35-cu. ft. |
| Drive | adjustable rubber belt |
| Bearings | bronze |
| Lubrication | special dipper type |
| Motor | ½-h.p., 60-cycle, A.C. |
| Net Weight | 105-lbs. |
| Gross Weight | 140-lbs. |

## Hobart Electric Sprayer

Hobart Bros. (paint spray equipment) Troy, Ohio, calls attention to their new "No. 153 paint spray compressor for continuous spray; portable—electric drive," which is "especially designed to supply air in ample volume at the right pressure for full one-gun operation on

heavy work where the oversize cap and nozzle are required with the large size spray gun. Particularly desirable for spraying

Dimensions (overall) 39-in. high; 42-in. long, 18-in. wide.

lacquer on a production basis. Can also be used to advantage for operating two of the smaller size guns. The special air-cooling coil described in the specifications adds materially to the efficiency of this oversize one-gun compressor."

**Specifications**

| | |
|---|---|
| Motor | (B.B.) 1750-r.p.m., 2-h.p. |
| Compressor | |
| Bore | 2¾-in., stroke 3½-in. |
| Cylinders | two, air-cooled |
| Speed | 500-r.p.m. |
| Displacement | 12-cu. ft. p.m. |
| Maximum pressure | 80-lbs |
| Storage tank | 22-gals. |

The outfit is completely equipped with suitable fittings of high quality.

---

## Putty and Caulking Outfit

The Paasche Airbrush Co., 1921 Diversey Pkwy., Chicago, in reference to its newly developed putty and caulking outfit, declares that "this unit has been especially designed for flowing heavy ma-

*A real finisher that FINISHES!*

**ECONOMY DeLUXE SPRAYER**

**Perfectly balanced, non-tiring, strong, serviceable AND light in weight, (2 lbs.).**

**A real find for the finishing room!**

**Designed for suction, gravity or pressure feed.**

**Soft, uniform spray of lacquers, that leaves a beautiful finish.**

**There are many good reasons for the popularity of ECONOMY Sprayers.**

***Coupon or letter will bring descriptive literature and prices.***

ECONOMY MACHINE PRODUCTS CO., 5214 Lawrence Avenue, (Jefferson Sta.), Chicago, Illinois.

Name .....

Address .....

City .....State .....

A ¼ C H squeeze of the spray gun bears testimony of Alaka's sterling qualities. We get the applause in its sincerest form . . . . . Orders! Samples and a pocket size booklet on "Finishing" available on request.

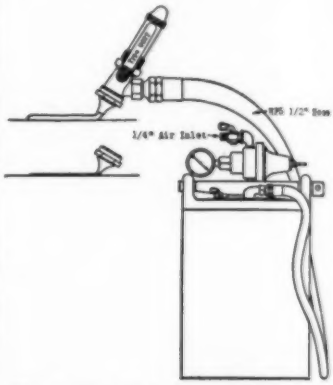
**LACQUER & CHEMICAL CORP.**
214-222 40TH ST.-BROOKLYN N.Y
CHICAGO *makers of* ALAKA PHILADELPHIA

**Hy-Speed**
**EXPLOSION-PROOF ELECTRIC MIXERS**
Clamp to *any* tank and mix *all* liquids

**MIX QUICKER**
**LAST LONGER**
**COST LESS**
*Note Patented "Push Pull" Propeller Action.*
**ALSOP**
**ENGINEERING CO.**
39 West 60th St. New York

terials, such as putty for bedding glass, caulking putty and any other heavy material in sufficiently liquid state to seek its own level."

It can be equipped with nozzles




The pressure tank has a clamptight cover, regulator fluid outlet and airdrain valve.

to connect with hose of ¼, ⅜, ½ or ¾-in. diameter, depending entirely upon the capacity of feed required of the various types of material that can be applied by pressure system of this type.

Pistol grip can be supplied in place of thumb action where desired. A slotted nozzle to produce a ribbon effect can be furnished in place of the round nozzle if desired.

---

A bulletin board is commonly used as a safety advertising medium upon which are mounted posters, homemade bulletins, photographs and statistical material. Signs dealing with specific hazards are also frequently located in certain departments or at strategic points in the plant.

**Write Dept. F. 2. for copies of these new Research Department Bulletins on Machine-Coating Lacquers.**

***#29: Subject: The Continuous Coating of Metal Strip. #30: Subject: Coating Collapsible Tubes or Cylindrical Objects. #31: Subject: Machine-Coating Lacquers for Application on Flat Sheets.***

PERSUADING THE COATING MACHINE TO CUT COSTS

That the Coating Machine operates at lower cost than Spray Equipment has been demonstrated. Now our plant is scaled to large quantity production of Machine-Coating Lacquers commercially proven to possess the flexible and adhesive qualities for which our products are known.

Roxalin customers using the coating machine know that after the flat sheets have been finished, THEY CAN BE BLANKED AND FORMED without Chipping or Flaking.

Send for the Research Department Bulletins enumerated above.

ROXALIN FLEXIBLE LACQUER COMPANY, Inc.

105-109 Seventh Avenue, L. I. City, New York

# *100 Pounds of Pressure Versus a Man's*

A radical change is taking place in paint shops everywhere. The tough, slow job of sanding through human effort now needs only guidance from the human hand.

For the Hardie-Robart Air-Powered Sander, in a fraction of the time formerly needed, takes the ache out of muscles and payrolls.

Thirty-six hundred strokes back and forth per minute, each stroke three quarters of an inch! Two hundred feet of sanding per hour.

Can't gouge or scratch. Yet the Hardie-Robart Air-Powered Sander makes feathering, sanding wet or dry — polishing, on flat or curved surfaces, just so much child's play. And sandpaper, labor and time savings are tremendous.

*Shall We Send The Details? Where?*

**HARDIE MFG. CO.-Hudson, Mich.**

**HARDIE AIR SANDER**

**$69.00**

***Sand the Undercoats and the Topcoats Take Care of Themselves***

**Kindly mention INDUSTRIAL FINISHING when writing advertisers**

# Industrial Finishing

Issued fifteenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

PRACTICAL PUBLICATIONS, Inc.
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Advertising rates on application.


## EDITORIAL

### *New Art in Industry*

Few, if any, manufacturers will disagree with the statement that decoration—color, design, form—enhances the sales appeal of nearly every kind of merchandise. Frequently, however, it is difficult to determine the type of decoration to be used.

"Art Moderne," for instance, offers rather perplexing considerations. Some manufacturers believe that it is as fatal to introduce styles and designs that are far ahead of the general public trend as to stand still or drift backward in the matter of style and design. From information supplied by a number of manufacturers in diversified lines of industry, it would seem that manufacturers, in order to minimize the speculative element involved in introducing new styles and designs, should answer these questions:

Does the general public appreciate and like the new art trends? Will the new decorative motifs lend themselves easily and gracefully to my product? Will the public buy my product if I embellish it in present day artistic modes?

Perhaps the view of others will be of help in handling the art aspects of decoration. The experience of one prominent manufacturer of paper novelties, for example, indicates that "the extremely radical thing is almost sure to be a failure for mass consumption. But what is radical today may be acceptable five years from now, so we must take only some part of it for the short step of one year hence."

Research, that indispensable ally of forward-looking business men, has a place of consequence in the art phase of industry. Facts will indicate the course to be pursued and the particular trail to be followed to come to a desired end. —Executives Service Bulletin.

### *Color Trends; Quality Finishes*

Color trends on some products are often more puzzling than design trends. Design trends are limited by what is practical in the manufacture and use of a product, but not so with color. Color preference and demand must be determined to a great extent as are other intangibles, such as volume of sales and new markets.

After the first use of color on a product and when the novelty of color has generally worn away, the use of color thereafter becomes more of a problem. This is particularly true in the case of articles that are installed or used in close proximity with others, which also are in color. The problem of matching or harmonizing with this

unknown quantity has made the color problem of considerable importance to some factory executives.

Examples of merchandise coming under this classification include: electrical fixtures, awnings, novelty furniture, toilet sets and devices, kitchen and bedroom clocks, kitchen utensils, handles, typewriters and automobile accessories.

Some manufacturers are seeking refuge from such a color problem by using new novelty finishes that give a pearly or whitish decoration over a dark or a black base. Others use color finishes which are dark enough to avoid clashing with whatever colored articles may be placed or used near by.

The novelty or extraordinary finish does not depend altogether on color preference for its recognition. Indeed, the decorative value of the finish itself often so overshadows the color impression of a product that the color is forgotten when the article and its finish are described sometime later.

Another important phase of color and finishing material selection, apart from the increased saleability of the product, is the quality of the finish as regards durability. Damaged merchandise can run to a surprising figure if the finish has any tendency to crack, chip or show through in spots. Even the slightest imperfection in a color finish is sufficient excuse for the article to be relegated to the "mark down" counter.

---

Quality finishes and durable finishes, therefore, are not wholly for the customers' benefit; in some lines they are considered as worthwhile sales insurance.

WATERPROOFED

CADILLAC SHELLAC

has helped solve many finishing problems. In it are combined the good qualities of SHELLAC and LACQUER. And—it is *economical.* Look into it.

CADILLAC SHELLAC COMPANY
INC.
Ferndale (Detroit) Mich.

**Small and Compact**

**but efficient and powerful**

The most efficient compressor for its size ever built. Small size, weighing 75 pounds, will handle 4-ft. gun...large size, weighing 100 pounds, will handle 7-ft. gun.

Delivers a steady flow of clean air, free from oil, moisture or pulsations. *Write today for price and complete description of this latest development in portable spraying units.*

**Air-More Products Corp.**
**3402 Northwestern Ave.**
**Indianapolis, Ind.**

## STENCILS for SCREEN PROCESS

FOR oil paint reproduction of artistic commercial and decorative effects on any smooth surface or substance.

Screens made from your designs or we will furnish art and screens complete.

Tell us your needs so we can be helpful in our first reply.

ART-WAY, Inc.

603 E. Washington Indianapolis

## Stabilisal "A"

THE increasing sales and ready acceptance of this product by leading lacquer manufacturers prove conclusively its outstanding advantages in the manufacture of bronze lacquers, and clear metal lacquers.

Stabilisal "A" is the only product, which when added in small quantities to bronzing lacquers, prevents their jellying.

Stabilisal "A" is the only product, which when added in small quantities to clear metal lacquers, minimizes tarnishing and discoloration of the film.

*Samples and Literature upon request*

**KUTTROFF, PICKHARDT & CO., Inc.**

1150 Broadway New York, N.Y.


## Decorative Finishes

(Continued from page 80)

ground. Apply the ground in the usual way. When dry, mat the surface with a light coat of same color, holding the spray far enough away to get the desired results. When dry, make up a pale green consisting of one part chrome green medium to four or five parts white. Thin to a thickness of thick cream; use a stiff brush and pick up a little color on the brush and work well into the surface, using just enough to cover. Keep working with the brush and the highlights will reveal themselves.

Wipe off the extreme highlights with a soft cloth. After this is dry, you will have a smut coat if the surface was well matted on the first coat. This smut will catch, even if wiped clean, and give a fine metallic effect. For a smut use one part drop black and one part chrome yellow. This will give a chrome yellow which closely resembles acid verde. There are many different ideas about what shade of green this should be, so the user must make this according to what is best for his product.—J. K. Cooper.

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Many companies supplement bulletin board safety displays by placing signs regarding specific hazards at locations where employes are subjected to those dangers. In other cases signs bearing a general safety message or reference to company safety regulations are prominently displayed.

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The prime desire of a wood finish is to reveal the natural beauties of the wood.